EDITORIAL

HAVE you a little $200 exemption in your home?

DON'T neglect to file your income-tax return on or before March 15.

THIS seems to be the open season for Premiers and other prominent people.

AT last, a use has been found for army red-tape. They are using it for discharge chevrons.

EX-PRESIDENT TAFT is no longer able to get up in a street-car and give his seat to three women.

POURING of concrete is now under way at the Emergency Fleet Corporation's yard in the Oakland estuary.

DID anyone suggest a Bookkeeper's Union with time and a half for overtime between now and the 15th of this month?

HOW to pronounce 'sabotage' is the subject of considerable discussion. For our part, we think it ought to be pronounced 'treason'.

THE Scandinavians never have had much use for Russians and Russian ways of doing things, from the days of Charles XII to those of Ole Hanson.

A CALIFORNIAN company is preparing to place a one-man aeroplane on the market for $2500. A few more years and they will be as cheap as 'flivvers'.

SIX months or more to discuss the provisions of a revenue bill and three weeks for the business men of the country to make up the intricate returns required and to raise the cash to pay the first installment is a fair measure of the consideration that the industries of the country have received from Congress.

THE Railroad Administration report for December shows conditions going from bad to worse. Gross receipts, because of increased rates, are much higher than in 1917 under private management, but operating expenses have risen much faster so that net receipts are nearing the vanishing point. Many railroad systems in various parts of the country are not even making enough to pay the greatly increased operating expenses. It is not a showing that encourages one to believe in Government operation.

ASSEMBLY BILL No. 306 would seriously interfere with the use of paint-spraying machines on ships, buildings, and other structures. Under the camouflage of protecting the workman from poisonous gases and fumes, which end can certainly be attained in other ways, is the age-long opposition to labor-saving machinery, based on the mistaken theory that it reduces the number of jobs available. The bill should be defeated.

WHILE the suggested plan for making schooners out of the wooden ships being built for the Emergency Fleet Corporation may be feasible where little has been done except laying the keel, it can hardly be applied to ships that have had considerable work done to them. The lines of a sailing vessel necessarily differ from those of a steamer, particularly near the bow, and the cost of changing the hull of a steamer so that it would be suitable for sails would be prohibitive.

AN interesting comparison between the efficiency of the so-called 'volunteer' system during the Civil War and the selective-service system is given in the annual report of Provost-Marshal Crowder. During the Civil War, 2,690,401 men enlisted, 98% of them at least nominal volunteers, and the expense for bounties alone was $586,164,528. During the first 14 months of the present selective-service law, 2,552,173 men were inducted into the service throughout the country at a cost of approximately $20,175,000.

WHERE a business can be kept going at all without reducing wages, there is no question but that every effort should be made to continue the same wage-scale, particularly as long as there is little or no reduction in the cost of living. However, there is coming a time, in some industries it has already arrived, when the question will be simply this, 'Shall we shut down entirely, or shall a small reduction in wages be made?' In answering this question, the workman as well as the stockholder must be consulted.

HOW easy it is to start a rumor, especially if it is about a wooden ship, was shown recently in the case of one of the new Ferris-type ships of the Emergency Fleet Corporation. While taking on cargo at Honolulu, water was found in the hold, and instantly the report was started that the ship was unseaworthy. Further investigation, however, showed that fresh water had found its way into the hold from a valve carelessly left open in a pipe-line for filling the ship's water-tanks. Thus another beautiful scandal about the wooden ships was nipped in the bud.

Generated on 2024-09-30 01:47 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Making and Selling

The manufacturing mind is one thing and the selling mind is another. Sometimes they are both to be found well developed in one individual, and then you have a genius. Usually, however, if a man has one set of faculties well-developed, the other is poorly developed, or, perhaps, virtually absent. One of the keenest factory superintendents on the Pacific Coast was talking recently to a member of our staff about the business situation, the price of hogs, and a few other things. Taking up a trade journal from his desk he pointed to a full-page advertisement of a concern in an allied but not competing line of business, he said, "If the ——— Company find it necessary to go out after business to this extent, it is a good scheme for us all to sit tight."

Price-Fixing by Suggestion

Mental suggestion has been employed for the curing of many human ills, but its application to dropsical prices is, we believe, something new. The scheme is proposed by Secretary of Commerce William C. Redfield and has the approval of President Wilson. It resembles the plan advanced on behalf of the iron and steel industry by E. H. Gary just before price-control ceased. Mr. Gary prepared a schedule of new prices including reductions on most iron and steel products from the prevailing Government prices, and proposed that the War Industries Board, while not fixing these prices, should approve them. Although the price-fixing committee declined to give any official sanction to these prices, they have been the ruling figures since January 1, when control by the War Industries Board ceased. Secretary Redfield's plan calls for appointment of leading men in each industry to investigate conditions and 'suggest' price-schedules, with the expectation that these will be observed without the exercise of compulsion on the trade. While the return of pre-war prices is not probable, it is generally recognized that some reductions must come in the prices of almost every commodity. Any method that bids fair to accomplish this with the least disturbance to industry should at least be given a fair trial. In other words, we need all the help we can get to enable us to let go of the bull's tail with safety to all concerned.

After April 1—What?

The first of April is commonly associated with certain time-honored customs, which are amusing or not according to the point of view. This year, however, as far as the metal industries of the Pacific Coast are concerned, interest in these sports will be overshadowed by the expiration of the Macy agreement. While reliance upon the Macy agreement, in some cases, resembled leaning upon a reed, which, if not broken, was at least badly bent, there was at any rate something that will now be lacking. Now comes the problem of adjusting a wage-scale for a falling market, which, at the same time, has not fallen far enough to make any appreciable difference in the wage-earner's cost of living. Again, the Emergency Fleet Corporation, which indirectly is the principal employer of labor in the Coast metal industries, has changed from its pre-armistice willingness to pay almost anything in order to get the ships built, and is counting costs carefully and comparing them with costs in foreign yards. The problem is serious. Whether it is insoluble or not depends upon the spirit in which it is approached by the leaders on both sides. If their point of view is the general good of the industries, a solution will be found, which, while not entirely satisfactory to either side, will ensure the prosperity of the industry. If either side tries to get all it can for itself, strife and discord must follow.

The League of Nations

San Francisco has had the privilege during the past month of welcoming and listening to the members of the 'all-star aggregation' that are generously devoting their time to arousing interest throughout the country in the plan for a League of Nations and to explaining what the plan really means. Before they came, there was a pretty general idea that, while the League of Nations plan might be all right, it was something for the politicians in Washington and London and Paris to fuss about, and of no consequence to the general run of people in America, particularly on the Pacific Coast. Anyway, we had no call to meddle with Europe's affairs and could keep out of them if we wanted to do so. If anyone continues to hold that viewpoint it is because he attended none of the meetings nor even made a careful study of the newspaper reports. Looking at the matter from the selfish standpoint alone, the adoption or non-adoption of the League of Nations plan is going to have a far-reaching effect on prosperity right here in California. It is not a question of choosing whether or not we shall meddle in European affairs. We thought we could choose not to do so in 1914, and we ended by doing the most extensive and effective meddling in European affairs that any nation has ever attempted. Then, there was no choice for us but to adopt the cruel inefficient way of meddling that has been the rule throughout the ages. The question is, shall we let things slide, with the reasonable certainty that ultimately there will be another and much worse war, or shall we join with the other civilized nations in establishing a new and better way of handling the affairs of the world? Nobody claims that the plan just drafted at Paris is perfect. Like a collective bargain, in order to be adopted at all, it cannot be entirely satisfactory to anybody, but it is the best agreement that is feasible at the present time, and marks a tremendous advance over the old order of affairs. Realizing this, let everyone take it upon himself, if any pinhead in the United States Senate (and, unfortunately, there are several of that breed) seizes the opportunity to do a little peanut politics, to see that he gets such a

Generated on 2024-09-30 01:50 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

scare as to make him vote right when it comes to the showdown.

Foreign Trade and Domestic

A number of people are getting all wrought up about the so-called British 'embargo'. It matters not that the embargo will have little or no effect, either direct or indirect, upon the welfare of most of them. They are excited, and they want to have something done about it. On closer examination, however, it appears that the embargo is really little more than the extension of some of the trade restrictions enacted while hostilities were in progress, and which are being continued in order to give certain of the British industries a chance to get on their feet during the transition from war to peace conditions. This may be prejudicial to some American industries, but it is certainly well within the rights of the British government. However, this incident brings up again the whole question of whether it is possible to place too much reliance on the possibilities of developing foreign trade. Almost every country has, during the war-period, been obliged to place greater or less restriction upon export and import trade. Now that peace is approaching, many of them are showing a reluctance to remove these restrictions. In the competition following the War, most nations are going to try by legislation to give their own producers the advantage in the home market, while praying that the other nations will refrain from doing likewise. It makes no difference whether or not this course is a wise one, it is going to be taken. This legislation may take the form of direct restrictions on imports or of a high protective tariff, like our own, and the exporter's path is not going to be an easy one. Foreign trade is important, and we should have more of it than we have had in the past, but the home market also needs cultivating.

Freight-Rate Changes

San Francisco ship-owners are up in arms as a result of the recent reduction in ocean freights between the Orient and both Atlantic and Pacific ports. The beginning of the trouble dates back to the order of the Railroad Administration, increasing transcontinental and other freight rates and abolishing the special import and export rates on most commodities. These import and export rates were established as the result of years of experience and adjusted so that both Atlantic and Pacific Coast ports had a share of the Oriental import and export business. Prior to the armistice this order made little difference as far as division of trade was concerned, shipping being largely confined to the Atlantic ocean, and the Oriental trade naturally coming to San Francisco. Now, however, more ships are available, and the reductions in tariffs do not leave a sufficient margin between the rates from Oriental ports to San Francisco and the rates from Oriental ports to New York to compensate for the railroad freight-cost across the continent. In fact, the present arrangement is such that San Francisco importers and exporters not only cannot compete in shipping to and from Atlantic Coast points, but also, on many commodities, they are at a disadvantage as far west as Kansas City. Unless the Railroad Administration modifies its rulings, the new merchant marine, or the old one either, will do San Francisco very little good, and plans for increasing harbor facilities around the Bay might as well be abandoned. The difficulty seems to be that the rate-fixing department of the Railroad Administration has fallen into the hands of bureaucrats that are determined to base transportation rates simply on cost of service, without regard to many other factors that have been considered in past determinations.

Re-educating Injured Workmen

Once in a while, we find an example of some beneficial result accruing from the War, to balance in some slight measure its tremendous and inconceivable miseries. A conspicuous example of this is the new attitude toward both battlefield and industrial injuries. We know what has been the fate in the past of the seriously wounded in war or industry. Injured men of exceptional ability rose above their handicaps and fought their way back to a real job and, in some cases, to distinction, but the fate of the ordinary man was pitiable. Starvation, charity, direct or disguised in the form of a pension, or a chance to stagnate at some such monotonous and ill-paid job as crossing flagman, there was little to choose between these fates. But the spirit shown throughout the War has been not to assume that an evil is a necessary one just because it has always existed. Before America entered the War, most of the other belligerents had developed plans for re-educating injured soldiers in case they were unable to return to their old occupations, and the United States is following the same course. From this it was a natural step to re-educating the wounded in industry, where the casualties every year greatly outnumber those in the American army. As a matter of fact, there are few men, who survive an injury at all, that are not able and cannot be trained to do something useful. In another column, Mr. Douglas C. McMurtrie, of the Red Cross Institute, tells something of the extent to which re-education is possible. It is particularly important that a man's previous experience be utilized in training him for his new work. Thus a brakeman who has lost a leg is far more useful both to himself and the community as a telegrapher or as a station-agent than as a crossing flagman. Not only is re-education a blessing to the injured man, but there is an actual saving to industry as a whole, since the cost of training is small compared with the increased producing power of the worker. The reconstruction of the world after the War needs the fullest abilities of everyone, crippled or able-bodied.

Generated on 2024-09-30 01:47 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Collective Bargaining on Trial in the San Francisco Bay District

Pending the conferences leading to the compromise agreement of January 20 between the Iron Trades Council and the California Metal Trades Association, no drastic action was taken by either organization in regard to the violation of the agreement by the machinists' union in taking the Saturday afternoon holiday. This compromise provided that the Macy scale of October 24, 1918, should be put into effect as of January 20, 1919, and should be effective until April 1, 1919. It further provided, in consideration of the extended agreement, that an additional amount should be paid men working in the shops between October 24 and January 18, such additional amount to be the difference between the old rate paid and the Macy scale. This amount was to be paid in three installments. The compromise agreement stated specifically that the agreement of January 20 should be in full force and effective in all its clauses and terms, except as to wages, until April 1, 1919.

The machinists' union accepted the compromise agreement as to wages and as to the date, namely, October 24, 1918, from which the wage was to be effective, but continued to take a Saturday half-holiday in violation of the agreement. The Iron Trades Council ordered all unions to work Saturday afternoon pending the settlement of this matter through conference in regular form between the Iron Trades Council and the California Metal Trades Association. On account of continued violation of this ruling the machinists' union, the Council expelled the San Francisco, Oakland, and San Jose unions.

The machinists' unions presented demands to the individual employers for the Macy scale and for the first payment of one-third of the amount calculated from October 24, but because of the violation of the agreement in taking Saturday afternoon off, the employers refused to accede. On February 7 the men struck in all shops outside the shipyards and continued to take Saturday afternoon in the yards. At the time of going to press, the shipyards were taking steps to make the men live up to their agreement, and had posted notices stating that all men taking a half-holiday on Saturday, March 1, would be discharged.

The California Metal Trades Association takes the position that collective bargaining is in serious peril and that the relations between employer and employee are threatened with disruption. The question at stake is not the Saturday half-holiday, but whether agreements made between employer and employee shall be observed or shall be treated as a scrap of paper to be violated at will.

Boiler Makers Union No. 6 refused to abide by the compromise agreement, demanding retroactive pay to August 1, and struck on February 1 in the shops outside the shipyards. This union was also expelled from the Iron Trades Council for violation of the agreement. Although the majority of the members were employed in the shipyards and therefore continued to work, the Council held that the whole union was responsible for the strike of some of its members.

Union No. 6 proposed to the California Metal Trades Association that a mediator should be selected to whom both parties should submit their differences and agree to abide by his decision, but the Association declined to consider any such proposal, as its agreement with the Iron Trades Council, to which Boiler Makers Union No. 6 was a party, permitted the Association to deal through the Iron Trades Council only.

The Association and the Council have worked together to the advantage of all concerned for the past 11 years. Although 19 crafts have accepted and are abiding by the agreement, the boilermakers and machinists are striking in nearly 100 shops, and this is certain, if continued, to cause thousands of men in the other crafts to be laid off. The international labor organizations have been asked to order these men to return to work and to abide by the terms of the agreement. Early in February, M. J. McGuire was appointed personal representative of Louis Weyand, international vice-president of the boilermakers union, with instructions to order the boilermakers who were on strike in the trans-bay yards to return to work, and with authority to concel the cards of any who refused to comply. He addressed several meetings of the men, and, as a result, a large majority of them returned to work in the shipyards on Monday, February 17. Over 3000 men have signed a petition for a re-organization of Union No. 233 with different officers or else for the issuance of a new charter. The rest of these men are still out, and are holding meetings and engaging in picketing. At their meeting on February 24 they agreed to go back to work as instructed in a telegram from their international union, provided that all the men would be reinstated in their old jobs, and provided the shipyards would agree to submit the matter in dispute for arbitration to W. V. Angel, international organizer, who was active in union councils in Oakland before he was called back to international headquarters. The shipyard officials state that they will take back all the men for whom places can be provided, but have not committed themselves further.

Union No. 233 went on strike to force a re-classification of burners, drillers and reamers, plate-hangers and helpers, hook-tenders and helpers. These men are all classified in the shipyards as semi-skilled or skilled laborers and not as mechanics. The Macy decision classified them and fixed a rate for each separate classification, lower than mechanics' rate but slightly higher than the laborers' rate. The union demanded classification as mechanics for these employments with the rate of 80 cents per hour, and took a vacation to enforce the demands.

The Maritime Bay District Council, consisting of shipwrights, calkers, joiners, boat-builders, and millwrights, threatened a strike for February 1, in order to obtain a 44-hour week, wages $8 to $8.50 per day, 10% bonus for the night-shifts with half an hour for lunch on company time, employment through the union or through the United States Employment Service, and a number of other minor demands. They did not strike, for the reason that the international union refused sanction.

Generated on 2024-09-30 01:47 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

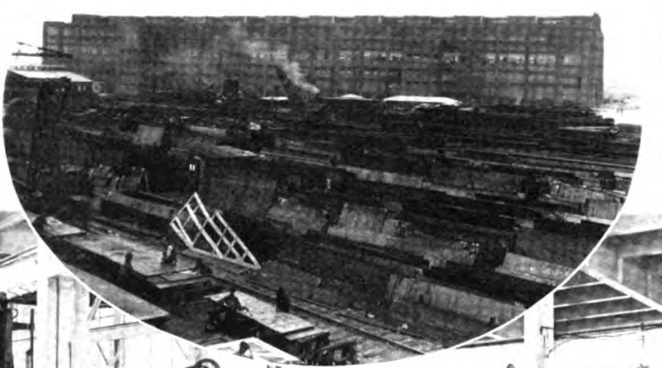
The Bethlehem Turbine Shop at Alameda

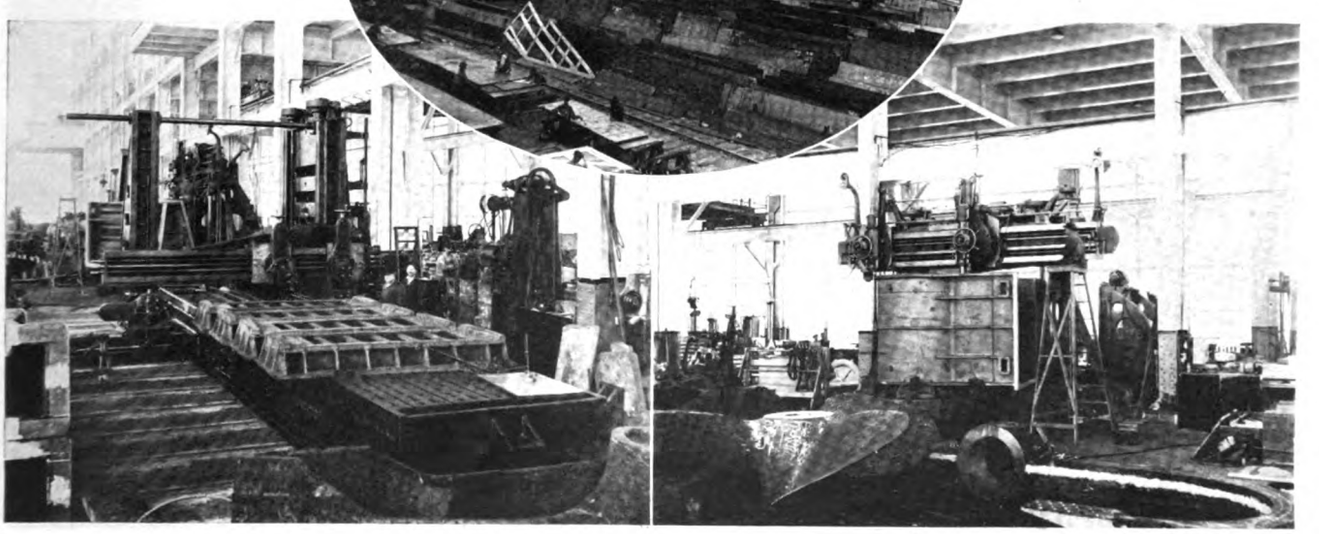
THE TOOL SHOP

THE construction of the turbine-shop at the Alameda Yard of the Bethlehem Shipbuilding Corporation was started July 1917 and was finished the following March. However, the tool equipment is not yet complete, as war conditions prevented the delivery of many of the tools included in the original plans. The primary purpose of the shop was to build turbines for 20 destroyers for the United States Navy, and most of these have been completed, but the plant is equally adapted for general machinery manufacture.

The building is 170 ft. wide by 560 ft. long. It is a steel-frame structure presenting an almost uninterrupted surface of Fenestra windows, 20% of which can be opened for ventilation. The main floor is divided into three bays and there is also a mezzanine floor for light tools, encircling the whole building.

Four towers, two on each side of the building, house the elevators, locker-rooms, and toilets. These towers are offset so that the cranes can run the full length of the





ABOVE, PLATE-YARD WITH TURBINE-SHOP IN BACKGROUND. BELOW, PLANER AND BORING-MILL.

Generated on 2024-09-30 01:46 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

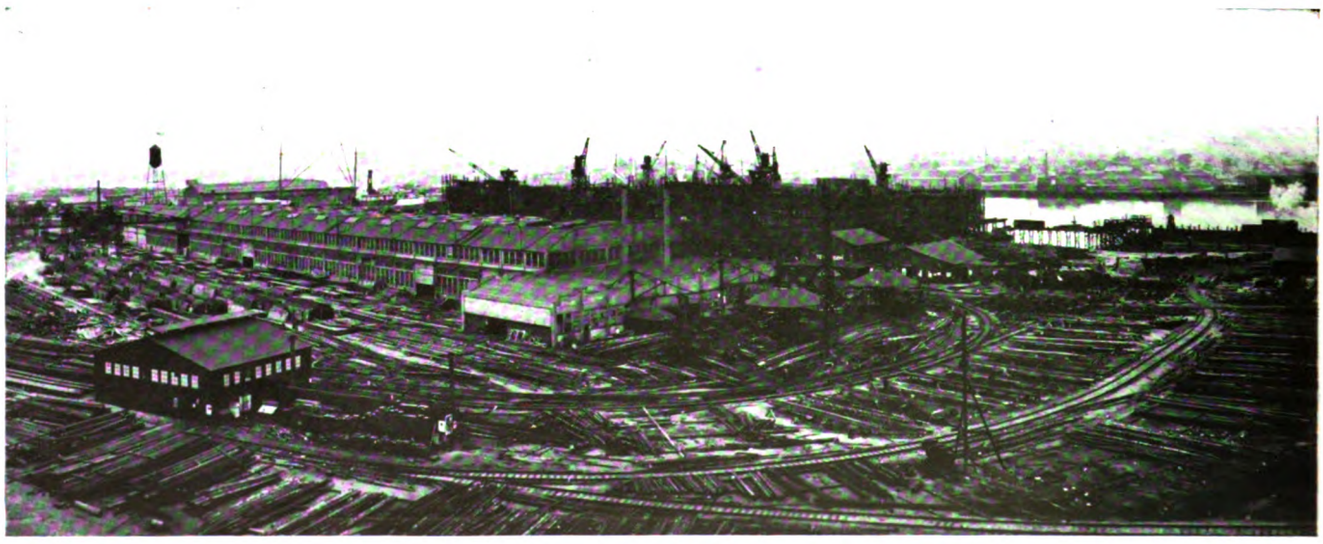
GENERAL VIEW OF THE SHOP, LOOKING EAST

building. Two of these towers are equipped with five-ton elevators. The lavatories directly adjoin both floors, the locker-rooms for the gallery being down one flight and for the main floor, up one flight. Drinking fountains have been placed at frequent intervals throughout the shop.

The inside of the building is painted with Rice's milled white, which, with the large window space, makes a well-lighted shop. The roof is of the Pabco guaranteed type made by the Paraffine Companies, Inc., of San Francisco. The doors are of the Kinnear steel rolling type, operated by electric motors.

The floor is on a pile foundation. In the main bay the floor consists of a 10-in. reinforced concrete slab, and in the side bays an 8-in. slab. The floors are designed for a load of 500 lb. per square foot. The concrete floors are covered with 6 by 6 by 6-in. redwood blocks, dipped in hot asphaltum and laid with the grain vertical. The interstices are filled with hot asphaltum to ensure a solid bond. The gallery floors are the same kind of redwood blocks laid on a 2-in. sub-floor. This floor has a carrying capacity of 250 lb. per square foot.

There are six 15 by 30-ft. cast-iron foundation-plates on the main floor for erecting purposes and one of the



PANORAMIC VIEW OF THE ALAMEDA YARD

Generated on 2024-09-30 01:50 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from
UNIVERSITY OF ILLINOIS AT
URBANA-CHAMPAIGN

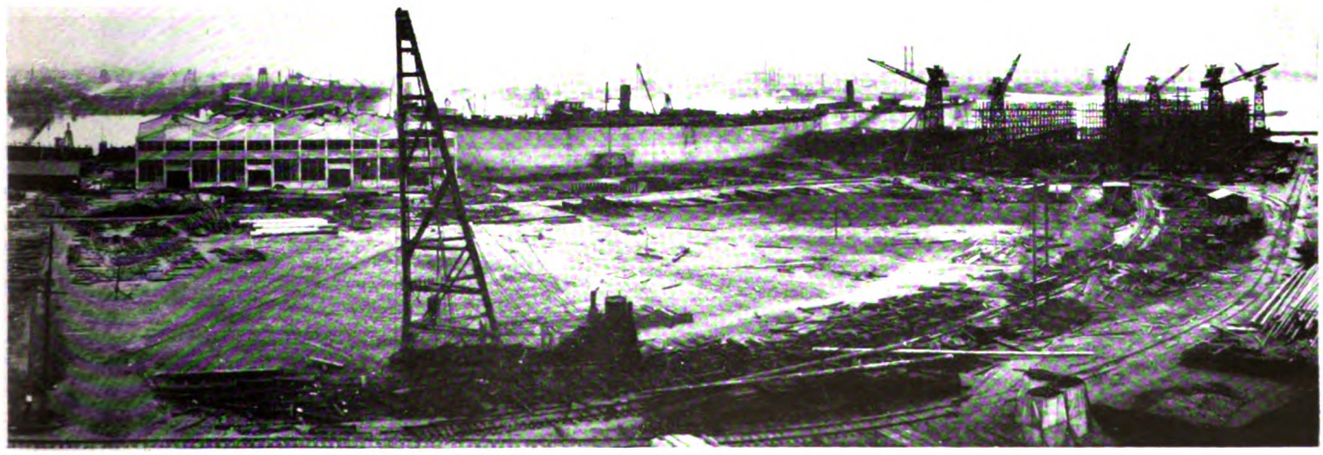
BATTERY OF TURRET LATHES

same size for straightening steel forgings and similar work. These plates have pits underneath them connected with the sewer. If it is necessary to build fires on the plates, the pit can be flooded to a point within a short distance of the surface and the plate kept cool. At the erecting end there is a set of six parallels with T-slots where machinery can be bolted down and tested.

The main bay is served by two 40-ton Shaw cranes and one 60-ton Shaw crane. The side bays downstairs each have two 10-ton Shaw cranes. The side bays upstairs each have two 5-ton Shaw cranes. These are all operated by 440-volt alternating-current motors. On the main floor there is a spinning-pit equipped with a 600-hp. turbine, with a full-load speed of 4200 r.p.m. This is to test the turbine-wheels after the assembly of blades. Each wheel is tested by being spun at 25% over-speed.

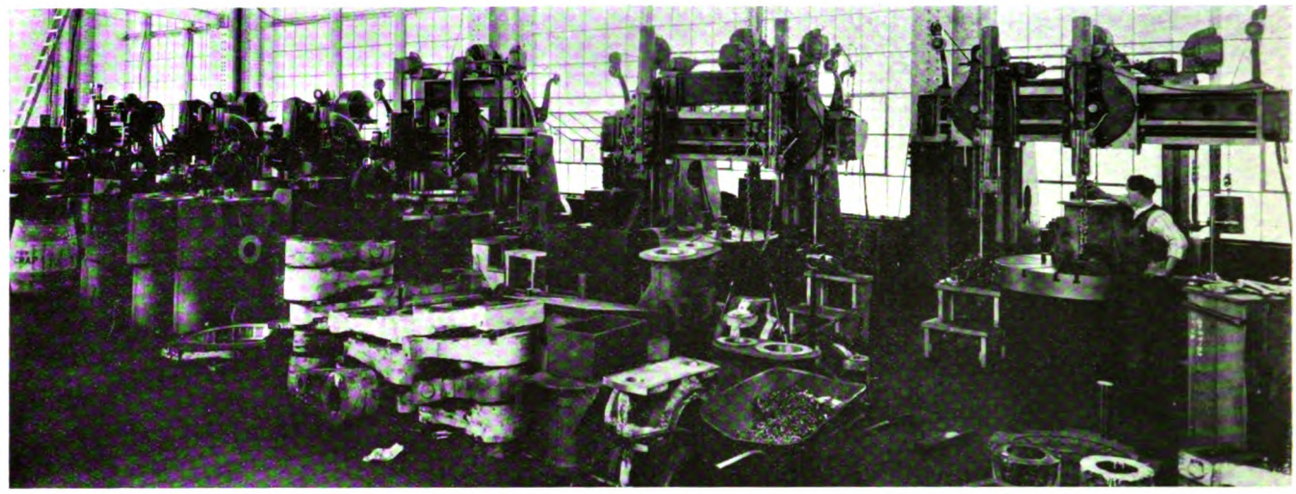
Two tracks enter the building, one at the east end and the other at the side. In this way material can be delivered to any bay, where the cranes can get it without transfer.

The building was designed by Frank Neitzel, after a thorough investigation of some of the most modern shops in the country. It is conceded to be the finest building



OF THE BETHLEHEM SHIPBUILDING CORPORATION

Generated on 2024-09-30 01:47 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN



BATTERY OF BORING-MILLS

for its purpose on the Pacific Coast and compares favorably with Eastern plants.

The electric equipment of the shop is noteworthy, as it differs somewhat from the usual practice. All motors on the tools are 230 volts direct-current, permitting the use of automatic control-equipment with dynamic braking and accurate speed-control operated by push stations. The operator can set his motor at the correct speed and then stop and start it with the push-button without having to regulate the speed each time. All the motors are variable-speed and are geared directly to the tools, eliminating losses in production due to slippage of belts. Contrary to the usuel practice, alternating current is used on the cranes, hoists, and elevators. This gives a great saving in maintenance cost over direct-current equipment. Type C Mazda lamps are used for lighting the shop. The lamps are 750 watts in the main bay and 500 watts in the side bays and the galleries. The current consumption is about one watt per square foot. The lighting load is 200 hp., which, at night, is more than the power-load. The maximum-demand factor is 20% of the connected load. The tools have been provided with motors capable of taking the maximum load. Few of the tools are working at the maximum load at one time, although they are working at maximum capacity.

Delivery of tools has been delayed on account of the War, so the equipment is not yet complete. The greater part of the main bay is for assembly work, but the larger tools are grouped along the sides. The following are some of the principal tools in the main bay. One 96-in. Detrick & Harvey planer, 30-ft. stroke, 14 ft. between the housings. One Niles-Bement-Pond boring mill, 15-ft. swing and 9 ft. under the rail. Six lathes: one 84-in. Pond, one 72-in. Pond, two 54-in. Putman, one 54-in. American, one 36-in. Niles. Four 6-in. Bickford drill-presses. One 7-in. Bausch drill-press. Two 30-in. Niles-Bement-Pond slotters. One horizontal Lucas boring-mill, taking a radius of 6 ft. with a 9-in. bar. One 5-ft. Niles-Bement-Pond horizontal boring-mill. One Detrick & Harvey planer, 24-ft. stroke, 72 in. under the rail. One 10-ft. Grant boring-mill. One 6-ft. Bickford drill-press. One 6-ft. Warren convertible drill-press.

The south side of the lower floor is devoted principally

(Concluded on page 148)

ENGINE LATHES AT ONE END OF THE SHOP

Generated on 2024-09-30 01:47 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

The Spirit of the Hive

Hi Carbon calls upon Maurice Maeterlinck to prove that one bee can't make honey by himself.

"It seems to me, Hi," remarked Smithers as he settled down in his familiar leather-backed easy-chair at the Iron Club one afternoon, "You left a heap of questions unanswered in that propaganda talk of yours last month. You established a sort of foundation for a lot of work to be done, and the general principle seems sound. But, like most other generalities, the real problem lies in working out the details."

"That is just the trouble," contributed Pettigrew. "The confounded difference between theory and practice has spoiled many a world-beating invention. For the sake of argument, I will admit the truth of all you said about advertising and those other things. What I am really interested in is how I can apply it all to my own particular business, and make it work, without having to spend so much money on blue sky as to give my stockholders apoplexy when they see me coming toward them."

"In other words," replied Hi, with a smile, "You ask me how to run your business for you, and I suppose that if my medicine doesn't work, you will sue me for damages, while if it does, you will take all the credit to yourself."

"Now don't be a crab, Hi," laughed Pettigrew," I have a notion that you havn't shown us all you have up your sleeve, so roll it up and get busy."

"Serves you right, then," replied Hi, putting down his cigar, "Here goes for some more of the same."

Hi hesitated a moment to collect his thoughts. Finally, after clearing his throat in the usual manner, he began.

"Did you ever hear of a chap named Maeterlinck, first name Maurice?" asked Hi.

"Can't say I did," replied Smithers. "What was he arrested for?"

"Speeding, perhaps, or wife-beating, or something," laughed Hi. "But, whether Maeterlinck had a collection of personal habits fit for a write-up in the Police Gazette or not, I don't know, and it doesn't make any difference anyway. The really important thing about Maeterlinck is that he is a great philosopher, who has a really wonderful insight upon human nature, and has written some books giving his observations that will live as long as the human race endures. One of his sayings has always stuck in my memory. It was about bees. He said that one bee could never make honey, for the reason that the bee, alone, has no intelligence. A single bee away from his hive, is quite helpless. A hive of bees, on the other hand, has a great well-defined purpose and intelligence, as shown by their wonderful productiveness when working under the influence of the community spirit. This is what Maeterlinck called the 'Spirit of the Hive'.

"You see the allusion, don't you?" continued Hi.

"In a way, I do," replied Smithers. "Go on."

"Well," said Hi, "go way back to the time Adam was fired out of the Garden of Eden, and had to hunt himself a job. In the due course of human events there were more people, who, whether from savage instinct, or the dawn of reason, banded themselves together for mutual protection against the wild beasts. From that day to this, we have had this banding together of people who have something, more or less, in common, for the sake of meeting collectively such emergencies as may arise more easily than could any individual if he tried to play a lone hand."

"This leads up to the principle of co-operation, and co-operative effort as opposed to single-handed fighting of battles. Remember this"—Hi paused to give emphasis

Generated on 2024-09-30 01:52 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

to what was to follow—"co-operation means sacrifice. Perhaps you never had it put up to you just that way, but it is true nevertheless. The people of a town or city, co-operate in paying for police and fire protection, for instance. Why? Because, it is the cheapest way to get it. Probably the great majority of the people never in their lives require the services of either police or firemen, and might urge, selfishly, that they should not have to pay for putting the fire out in the other fellow's house, but, if there were no community police or fire department, each individual within that community would have to take such steps individually as would give him a reasonable sense of protection. In the aggregate, this would cost infinitely more than co-operative protection for the good of the whole community. You see where the sacrifice comes in. The individual pays for something he personally may never need, but, should he need it, will need it bad. The worst case of selfishness is the man who either refuses to pay, or purposely evades paying his share for the common good. There are lots of such, and, of course, they benefit through the payments made by those who do pay."

"Then you believe in those co-operative associations, Hi," said Smithers.

"I certainly do," replied Hi, "and so does every other man who has any intelligence at all. There are so many of life's problems, especially those of business, which can be handled so much more cheaply and efficiently in that way, that I would venture to say that, if all such organization should suddenly cease to exist, the cost of living would jump so high as to be beyond the reach of all of us, except perhaps a good union riveter."

"Very fine, Hi," commented Pettigrew, "but where does the bee story of Maeterlinck come in?"

"Right here," replied Hi. "Bees and humans are very much alike. Neither can do a blessed thing without the help of a lot of others. Think it over and you will see that this is true. Consider our own country, its industrial growth and its condition now at the beginning of the post-war period. In the old days when all the cities and towns of any consequence were on the Atlantic seaboard, business and industry in general were composed of comparatively small units and catered to a custom within comparatively short distances. As the country grew, and the tide of population pressed westward, great transportation systems came into being, and with them the increased specialization of industry and the formation of gigantic aggregations of capital, since called 'trusts'. These 'trusts' became so great and powerful that a popular clamor against them, inspired more by fear of what might be than what actually was, caused a campaign of 'trust-busting', that might have wrecked the country industrially, until now 'trust-busting' has, we hope, been permanently succeeded by government regulation on sane grounds, whereby the benefits resulting from the greater efficiency of co-operative industrialism may be preserved without empowering the so-called 'trusts' to exploit those whom they serve. The War has brought an intensified study of foreign sales-methods as well as manufacturing organizations, particularly those of Germany. The German cartels and their methods of operating are now familiar to most of us, and the knowledge thus acquired has inspired Congressional action in the form of the Webb-Pomerene bill, which, as you know, permits pooling of manufacturing interests in order to compete successfully for foreign trade."

"Doesn't that contravene the Sherman anti-trust act, Hi?" asked Smithers.

"Yes, so far as foreign trade is concerned," replied Hi. "The essential thing, as I see it, is this. Due to the War, American industry is splendidly organized now, as far as the production end of it is concerned, and woefully deficient in organization for the marketing or selling part of the work. This deficiency becomes more and more accentuated the farther west we go, while on the Pacific Coast, I doubt whether any of our big manufacturers, especially in the metal trades, have any well-conceived plan at all for digging up markets for their manufactured products. There are, of course, some isolated cases to which this remark of mine does not apply, but, speaking in generalities, it is altogether too true. You see, in the past, the United States has itself afforded a market that has been absolutely gluttonous in its absorptive quality. Everything that could be produced was taken, and manufacturing facilities expanded in proportion to the increase in needs. Now, due to four years of War, and intensive War buying and production, our manufacturing facilities are many years ahead of the domestic demand. Not only that, don't forget that European countries owe us some ten billion dollars. How is this going to be paid? In gold? Not much. They haven't got it. It must be paid in manufactured goods, so our fellows are facing European competition in our own home markets of such an intensive nature as they have never dreamed of before. There will be tariff walls, of course, but we cannot make them high enough to shut out our European debtors. Don't forget the League of Nations, and all the other altruistic plans that the Peace Conference is trying now to reduce to some practical terms. We must simply make up our minds to face the situation, and then devise ways and means of going after it, hammer and tongs."

"How about that bee, Hi?" asked Pettigrew, with a smile.

"I heard you the first time," grinned Hi. "Here goes for Mr. Maeterlinck's plan. There are a great number of co-operative associations in the United States and elsewhere, made up of single units in the same line of business. By themselves, each unit is comparatively weak and vulnerable to trade attack. Collectively, however, they are strong, just SO LONG AS THEY STICK TOGETHER, and play ball as a team. Of course they are competitors with one another, and have their trade rivalries with themselves. On the other hand, they can, or ought, to sink their petty differences for the sake of their common good. Anything that could be done, collectively, to attract business to the members of their own organization would, in the end, inevitably prove of bene-

Generated on 2024-09-30 01:47 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

fit to each. There are, in the United States, certain shopping districts, if I might use this term. For instance, Chicago and Kansas City are both great meat-packing centres. Nevertheless, there are some mighty good meat-packing concerns in California, which might, to their advantage, do some co-operative advertising and trade-propaganda work calling attention to California's advantages, climatically and otherwise, for the preparation of choice meat products, and thus, before long, make the big meat-buyers consider California meat products whenever they are in the market. That could be done, through co-operative sales propaganda, not looking toward the establishment of some particular brand of meat products, but of all California-produced meat products. Thus, a buyer coming to California to fill his requirements would already be sold on California stuff; the only question in his mind would be whose California stuff."

"So that is the way it works," commented Smithers.

"Exactly," said Hi. "That is the primary object of all such associations. Their object is to establish the worth of the products of a certain industry as a whole, leaving to the individual members thereof the task of handling the propaganda in behalf of their own particular product. Every Chamber of Commerce in every city works for the good of the entire city, in all its diversified activities, every Development or Improvement Association works for its own members, while every organization made up of some particular industry works for that industry as a whole."

"All of this is interesting, Hi," said Pettigrew, "but how would you go about it in our case. Here we have an organization made up of many crafts, all embraced within what are called the metal trades. All are inter-related, and, at the same time, all are different.

"It isn't as difficult as it sounds," said Hi. "The material benefit to everyone of the crafts would be the greatest if buyers of iron, steel, and brass goods were made to know what can be done right here in California. Even the crafts represented in individual shops that cannot by themselves turn out a finished product would benefit immensely. This is proved by the immense amount of sub-letting that has gone on for several years by reason of the great ship contracts that were let to the big local yards. The pattern-shops must make the patterns for the foundries, the foundries must make the castings, and the forge-shops the forgings for the machine-shops. All of them have a finger in the pie. The number of works that are complete in themselves with departments covering every end of the game are few and far between, numerically so small, as to give the smaller shops at least an equally good chance for business." Hi paused a minute. Then, resuming:

"Suppose the boys here should make an association matter of it, just as other people do elsewhere. It would be a comparatively easy task to start the ball rolling and wouldn't cost much either. In fact, I am surprised to think that somebody has not started something of the kind before. A good publicity man, plus a good advertising medium, plus last but by no means least, the hearty co-operation of the individual members, would bring about a considerable change in the business prospects for all of them."

"It seems to me, Hi, that now would be a bad time to start anything like that," remarked Smithers, doubtfully. "Labor conditions are bad, the Government is talking about wholesale cancellations of ship contracts, and buyers generally are looking at the falling markets and holding off waiting for a drop in prices."

"The reasons you mention show conclusively why you should start at once, instead of delaying," replied Hi. "The worse business is, the harder you have to work to get any part of what little there is. Then, on the other hand, you musn't suppose for a minute, that if the local fellows utter one or two feeble chirps, the whole world is going to stop in order to listen to their music. For years you all have kept so religiously silent, except when you have told everybody that you COULDN'T compete, that you will have to make a long, loud, and sustained noise for some time, before you will get anybody to listen at all, and the longer you put off making that selfsame noise, the louder, longer, more sustained, and more costly it will have to be when you do start. I repeat, NOW IS THE TIME when the whole world is getting its selling machinery from the shelf where it has been accumulating dust for four years, for you to create some machinery of your own, and to put it to work for you."

"I don't know whether you are a tonic or a bromide, Hi," said Pettigrew, while a slow smile gradually broke across his countenance. "But, anyway, I, for one, am going to think it over, and see what some of the others think of it. You may be right, after all."

"Good-night, Hi," said Smithers, rising. "If you see that Maeterlinck bee, give him my regards. I have a sort of sympathy for that little insect."

"Good-night, you fellows," laughed Hi. "Don't forget that the Maeterlinck bee could turn out a good job, when he stuck by his little brothers in the hive."

"CAN ANY BOY tell me what harness is?" asked the teacher.

Not a single boy knew.

"Well," she continued, "is there any boy here whose father works among horses?"

One small boy stood up and answered. "Yes, teacher; mine does."

"Well," said the teacher, "what does your father put on the horse every morning?"

"Please teacher, every cent he has."

A CERTAIN NEGRESS has a white friend to whom she tells many of her troubles. Recently she brought a letter and unburdened her soul as follows:

"See dish yere letter, 'Somewhere in France'. That there no-count nigger of mine got lost again. And if he don't know whar in France he is, how kin I find him?"

Generated on 2024-09-30 01:54 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Reconstituting the Devastated Regions of France

By PIERCE C. WILLIAMS*

A FEW DAYS after the armistice with Germany was signed I accompanied French Government officials and industrialists on an extended trip over the devastated region. The tide of invasion had receded only a few weeks previously, and, for the first time in four and a half years, it was possible to see what the German occupation had meant in the way of destruction. For three days we rode over several hundred square miles of what, before the War, was one of the busiest industrial portions of the earth's surface. It was a region that had been dotted with coal mines, textile mills, blast-furnaces and steel-works, electric-power stations, chemical plants, and all of the varied establishments that characterize the modern industrial State.

We visited Lille and the important spinning and weaving district of which it is the centre. The Germans held this part of France from September 1914, until October 1918. We spent an entire day inspecting one pile after another of twisted steel and crumbling brick. They were all that remained of some of the most productive coal-mines of France. At other times we wandered through the shells of buildings that had been systematically pillaged of their machinery by the Germans during their four years of occupation. The third day, for hour after hour, with scarcely a halt, we sped over roads that crossed the old battle-field of the Somme. At frequent intervals we passed by low, grass-grown, moldering heaps of stones. We knew these to be the remains of former prosperous 'communes', because their names could be read in large white letters wherever there was a piece of wall still standing. The armies had been compelled thus to identify the ruined towns in order that their men might not lose their way as they moved back and forth over the abandoned and blackened country. War has now departed from the land we visited, but it can still be adequately described only by the name the soldiers gave it when it was the prize of battle. It is still 'No Man's Land'.

As a result of what I saw on that trip, and from what French industrialists engaged in organizing the work of restoration have told me, I have no hesitation in saying that the collaboration of American finance and industry will be required. But I must qualify this statement slightly by saying that the actual flow of orders to other than producers of raw materials may be slower in coming than the American manufacturer of industrial equipment perhaps expects. A glimpse of the devastated region is sufficient to convince one that the united efforts of the industrial world will be required to restore in our day what the Germans destroyed. But in estimating the volume of business that American factories may receive in the near future, it is necessary to consider the subject in detail. It is important for our business men to realize just exactly what reconstruction signifies to the French nation.

The collaboration of American finance and industry will be required in the reconstruction of northern France.

The average American business man is apt to think of reconstruction as a task which, while unquestionably immense in its proportions, is yet comparatively simple in methods of execution. He is apt to imagine the devastated region as a clean slate, so to speak, awaiting only sufficient labor and material for the work of restoration to begin. With such a picture in his mind it is natural for him to imagine that there must be an immediate need for new and up-to-date sewer and electric-lighting systems in cities and towns that have been damaged. It is equally logical for him to think of the damaged French railways as ready for the installation of new rolling stock, new steel bridges, and new signaling apparatus. He is likely to picture the thousands of damaged houses as affording an opportunity for the sale of builders' hardware. Destroyed factories naturally suggest to his mind the need for new labor-saving appliances of all kinds.

The average American is apt to think of reconstruction as an immense task that is, nevertheless, comparatively simple in methods of execution.

But the French task is much more than mere physical rebuilding, and the term the French employ to describe it indicates how vast the job looms in their imagination. 'Reconstitution' is the word the Frenchman uses, for what his nation has to do is practically to reconstitute, in all of its varied aspects, so far as it is possible to do so, the community life that, before the War, abounded in the now war-ravaged region.

The French task is much more than mere physical rebuilding, it is reconstitution.

The fact that, in much of the invaded territory, there is a considerable population without means of livelihood introduces a human element that must determine the methods adopted by the French government and the order in which areas and industries are reconstituted. Obviously, the reconstitution of an inhabited area must take precedence over that of an uninhabited one. To appreciate this point it is necessary to recollect that there are, roughly speaking, two sorts of devastation in the area which the Germans, at one time or another, overran. Each kind introduces a distinct problem in reconstitution and must be handled in a distinct manner.

First, there is a zone of practically complete destruc-

*Commercial Attache at Paris.

Generated on 2024-09-30 01:57 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

tion. Starting at the English Channel, in the north-west corner of France, it winds in a band of varying depth all the way across the country to the Swiss frontier. On an average, it is perhaps five miles wide. This band follows the 'old front line'. For months at a time during the past four years, large parts of this line remained stationary; that is, there was no important action, but a rain of high-explosive shells descended unceasingly upon it, so that everything that stood above ground was sooner or later blotted out. Whenever a big offensive took place, such as the allied advance at the first and second battles of the Somme and the unsuccessful German attack on Verdun, the zone of destruction was widened and deepened. This area of wholesale destruction includes an important part of the French coalfields, of which Lens was a centre. It also comprises several hundred square miles of fertile farm-land in the departments of Somme and Aisne, with all the towns and villages that dotted them, as well as the former populous cities of Arras, Douai, St. Quentin, Cambrai, Laon, Soissons, Rheims, and Verdun.

Much of this area may never be rebuilt. A large part of it is now uninhabited, the former residents being scattered all over France. Some of the farm-land is so badly torn by shells that it may never wave with grain again and may have to be given over to pine forests. The stone heaps, which are all that remain of several hundred picturesque 'communes', may be left as an enduring monument to Germany's nightmare of world empire.

Much of the area near the 'old front line' may never be rebuilt.

Between this zone, over which the battle swayed for more than four years, and the French frontier there is a section which, while it lay under the German paw for four years, was not, generally speaking, fought over. Consequently, it has not been damaged to the same extent or in the same way. The area in question contains the cities of Lille, Roubaix, Tourcoing, Armentieres, and Valenciennes, all important industrial centres. It also comprises a part of the coal region as well as an important steel-making district. This area was, in fact, the most highly organized industrial region in France. A large part of its French population is still there. It suffered damage in two ways. Cities were bombarded during the German retreat last October. Except in a few cases, like that of Valenciennes, the resulting injury was not irreparable. The most serious damage, however, suffered by this region was by reason of the systematic pillage and the wanton deliberate destruction carried out by the Germans during their four years of occupation.

The most serious damage in the occupied region back of the lines was the result of the systematic pillage and wanton destruction carried out by the Germans.

To illustrate: In the vicinity of Valenciennes there are a number of coal-mines. Until the final German retreat they were kept in nearly continuous operation. The Germans, just before their departure, blew up with dynamite the hoisting apparatus and power plants. We saw several such during our visit of examination. In many cases, fortunately, the damage is not serious. Steel-works, metal-working establishments, chemical works, breweries, and sugar-refineries were the special target for German hate in the occupied area. After stripping them of their machinery in a search for metals, the invaders blew up the buildings from sheer lust of destruction. This condition prevails over a large area. Whether these last-mentioned plants will be rebuilt will depend upon many factors.

But even where in isolated cases it would be possible to clear away the wreckage and rebuild an industrial plant, the work must be handled as part of a larger social problem. This is evident when one considers that, as stated above, in the region of the former German occupation there is a large French population that must be provided with the means of livelihood.

In the region of the German occupation there is a large French population that must be provided with a means of livelihood.

Let me illustrate this point by citing the case of Lille. Its population is about 250,000. When the Germans evacuated Lille in October this population was left without either food or employment. The night our party arrived in the city it was being provisioned with food brought all the way from Paris in motor trucks. We were informed that the textile mills, for the most part, had not been irreparably damaged. What the Germans had done was to requisition everything they could find in the way of copper, bronze, zinc, leather, rubber, and other raw materials of which they were in dire need. To obtain these materials they even stripped the textile spindles and looms of their copper bearings and leather belts. At the time our party visited Lille most of this machinery was completely out of service. Now, if the French problem of reconstitution were not largely a human one, the French textile manufacturer might prefer to scrap his old machines and purchase new ones. But, while awaiting delivery of the new plant, what would become of the people of Lille and its environs? They must immediately be given employment; and so, wherever possible, spindles and looms are being repaired with whatever is available, so that work can be resumed, even though it be on an inefficient and uneconomical basis. Later, when the region of Lille has solved some of its more pressing human problems, the textile manufacturers will doubtless wish to purchase new machines. Just now, however, what is needed is spare parts for the machines that can be repaired and raw material to work on.

The need for provisional repairs and 'makeshifts', instead of rebuilding from the ground up, is further shown by the following:

When we arrived at the Hotel de l'Europe, in Lille, the old Frenchwoman running it told us with great pride that it was the first night they had had electric light since the departure of the Germans. The enemy, as a farewell to the city, carried off some of the generating

Generated on 2024-09-30 01:49 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

and transforming units, thereby puttting the lighting plant out of service and leaving the city in darkness. The French Army engineers had just succeeded in connecting the plant with another power station several miles away, belonging to a coal-mine that had escaped destruction. Under other circumstances, and had not the Army engineers been faced with a grave social problem involving the comfort of a people that had suffered hardship for more than four years, the logical French mind would have concluded that it would be better business in the long run to scrap the remainder of the damaged plant and install new and up-to-date equipment. Under the circumstances, however, economic considerations had to give way to human ones. All over that part of the devastated region which is still inhabited the problem of reconstitution must be faced in this same manner. Plants so badly damaged that they must be completely rebuilt will probably have to wait some time before they can be given attention. In the meantime, factories that ought perhaps to be scrapped and rebuilt, but which can with slight expenditure be put into shape to employ the local working people, are being repaired and placed in operation.

Economic considerations have to give way to human ones.

In the case of certain cities and towns that formerly were important commercially and industrially the French government may have to decide whether it is justified, for the time being and under existing circumstances, in attempting to restore them at all. This is especially the case where the civilian population was long since evacuated and is now settled in other parts of France. Arras, the 'chief place' of the department of Pas-de-Calais, is a city that possibly may never be rebuilt. Before the War it had 30,000 inhabitants. It was not an important industrial centre, but it was the seat of departmental government. Although the city was never in possession of the Germans, there is little in its outward appearance to distinguish it from St. Quentin and other cities that were. It was under bombardment almost continuously for more than four years. There is not a house in Arras that has not been damaged by shells. We passed the night in the chateau of Comte Arsène de Bonniéres. Many of the count's windows had no glass, there was a shell hole in the roof, and the garden in the rear was scooped out by the explosion of a torpedo dropped by a German aeroplane. It was with difficulty that the British troops had kept a passageway open in the streets because of the débris that continually slid into them from the wrecked buildings on either side. At the time of our visit the French commandant told us that there were not more than a thousand civilians living in the town. The rest had departed with such of their belongings as they could carry and had made temporary homes in other parts of France. When the city of Arras is to be rebuilt it is difficult to say. French engineers in our party said that it would be necessary practically to raze the city to the ground before any reconstruction could be begun. And would it be justified, they asked, under the circumstances, with more urgent problems of reconstitution confronting France in other parts of the devastated region?

The city of St. Quentin affords another illustration of the impossibility of rebuilding immediately a badly shattered city. Before the War it was the industrial capital of the department of the Aisne. It had numerous textile plants, printing establishments, foundries, machine-shops, and agricultural-implement factories. Its population was about 50,000. I visited it a month before the armistice was signed, just after the British had driven the Germans out. There had been fighting in the streets between the British and German patrols. In several places, at street intersections, we saw the concrete block-houses, with narrow horizontal slits, through which German machine-guns had commanded the approaches.

The town showed the effects of the terrific bombardment it had recently undergone at the hands of both friend and foe. The railway station and the buildings in its vicinity were wrecked, as was the near-by cathedral, one of the loveliest in all France. Hardly a house in the city but showed in one way or another the effect of the bombardment by cannon and aeroplane. The civilian population had been evacuated before the Germans retired and the only inhabitants were some French soldiers. Private dwellings did not escape pillage by the German invaders. In perhaps 50 houses that I examined there was not a stick of furniture, not a picture on the wall, not an ornament left. Even the electric wiring and the gas fixtures had been carried off. The industrial establishments of St. Quentin had likewise been sacked by the Germans. Outside one building I observed a neat pile of steel shafting with its hangers and pulleys. Apparently the Germans were unable, in the haste of their departure, to carry the material away with them. The cost of re-equipping the industrial plants of St. Quentin alone would run into several millions of dollars. But the destruction in the city is so universal that it may not be possible to do any restoration for some months to come. In any event the rehabilitation of the city must proceed slowly, and, as there is not a large civilian population to care for immediately, the reconstruction of St. Quentin may have to be deferred until more pressing problems are on the way to solution. Among these more pressing tasks are the reconstitution of agriculture and the restoration of the coal mines.

The more pressing tasks include the reconstruction of agriculture and the restoration of the coal-mines.

In bringing the agricultural industry of northern France back to its former fruitfulness, modern farm machinery such as America produces will play an important part. The dearth of horses will make the farm tractor indispensable. The shortage of labor likewise will make the use of other labor-saving farm-appliances desirable. Here the peculiar position of French agriculture must be taken into consideration. There are more than 4,000,000 individual landowners in the country. This means that each farmer's parcel of land is

Generated on 2024-09-30 01:52 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

small. The appearance of the French village indicates this. The houses are not built upon the occupant's own land, as in America, but are huddled around a church. Each peasant cultivates his little piece of land, which may be some distance from the village.

The result of this system of small holdings is that the French peasant is not financially able to purchase expensive farm machinery. In the devastated region his difficulty is accentuated by the fact that such capital as he possessed before the War has been destroyed. Therefore, in order to market any considerable quantity of American farm machinery in connection with the reconstitution of agriculture in the devastated section of France, account must be taken of the necessity for selling to co-operative associations among the peasants. Without some system of purchasing farm machines in common, it will be difficult to built up a large business in France. The French government is alive to the situation and is assisting the formation of these co-operative farmers' associations. Perhaps farm implements will be purchased by the Government for distribution among the co-operative societies. In certain districts, moreover, agriculture provides the raw materials of industry. The sugar-mills of the Aisne are fed with beet-root grown locally. It would be useless to rebuild the destroyed sugar-factories before beet-root could be produced by the peasants of the region.

A basic industry, which is already in process of reconstruction, is that of coal mining. The necessity for restoring to productivity the damaged coal mines of northern France is obvious. Coal is essential to French industry, for there is no water-power in the North of France that can be utilized in its place. Without coal it would be idle to reconstruct the damaged electric-power stations, and the resumption of work in the industrial establishments of the devastated region would be equally impossible. The task of repairing the coal mines is in itself an enormous one. As stated above, a large portion of the coal region was in the battle zone for four years. Not only were the surface works destroyed by gunfire but the deliberate dynamiting by the Germans of the concrete lining of the shafts flooded the underground workings. At one of the leading mines the French engineers said the water was not more than 50 ft. below the surface. This particular shaft was nearly 1500 ft. deep.

Before there can be any thought of purchasing coal-extracting machinery for use underground, the mines must be pumped dry of water. This work alone may take a year for certain mines. The French engineers hazard no guess as to the condition in which the underground workings will be found after the water is pumped out. The Government engineers responsible for organizing the work of reconstituting the coal mines are busy assembling pumps, mine-hoists, gas-engines, and electric motors in order to begin the work of freeing the mines of water. When this job is well under way and there is some certainty that coal can once more be extracted, the question of rebuilding the mining villages and reconstructing the surface works will be taken up.

A point that must be given due weight by the French in planning the reconstitution of industrial establishments that have been destroyed is whether, in view of developments in the particular industry since August 1914 it is economical to rebuild them on the old sites. The ability of such factories to compete must be taken into consideration. The owners of many industrial plants in the invaded section are dead. In that case the plants may never be rebuilt, or they may be merged into others created during the War outside of the war zone. Questions of this sort are coming up all the time, and rebuilding will in many cases be delayed until they are decided.

A point to be considered by American manufacturers interested in selling reconstruction articles in France is the economic position of France itself. Everything that can possibly be manufactured in France must be turned over to French factories. It should not be overlooked that while there has been destruction of industrial capacity in the North, there has been in many lines a counterbalancing expansion in the central and south-western parts of France. This is particularly true of factories that could produce any sort of munitions of war, from tanks down to fuses. These factories might find themselves unable to guarantee jobs to demobilized French soldiers unless they were assured of orders growing out of the restoration of the devastated region.

Everything that can possibly be made in France must be turned over to French factories.

It is the task of the new Ministry of Industrial Reconstitution to see that these factories are converted into plants for peace. Inasmuch as the head of the new department is M. Loucheur, former Minister of Munitions, who until hostilities ceased controlled all French factories engaged on war work, it is safe to assume that French manufacturers will be given every opportunity to manufacture reconstruction goods.

To sum up, America's part in the reconstitution of devastated France will be to supplement French efforts. First of all, we shall undoubtedly have to supply French factories with the raw materials that France does not produce. In the second place, we shall doubtless be asked to fill certain gaps that at present exist in French industries. There will be many kinds of equipment that the French manufacturer will discover it is not economical for him to make in a plant which for more than four years has specialized in the production of something entirely different. If American manufacturers can demonstrate to the French industrialists the advantage of having certain machines, or parts of machines, made in the United States while the French concentrate on articles for which their factories are specially adapted, a business alliance permanently beneficial to both nations will follow.

No American manufacturer will object to the foregoing point of view regarding the restoration of France's devastated areas. It is obvious that most of the actual work of reconstitution can be done only by the French themselves. The restoration of life in the North of

Generated on 2024-09-30 01:53 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

France is a human problem. That being the case, local tastes, local prejudices, local laws, and local needs will have great weight in determining how reconstruction is to be accomplished in each area. For this reason the execution as well as the organization of the task must largely fall upon the French people. As the herculean task gets under way there will be ample scope and opportunity for American industry to show French engineers, industrialists, and contractors where we can assist them. In the meantime there is work for us to do at home in the gathering of facts bearing on the French problem and in the creation of an effective export selling organization in anticipation of the call that France will ultimately make upon our co-operation.

There will be ample opportunity for American industry to show the French where we can assist them.

Gauge Laboratories of the Bureau of Standards

THE Gauge Section of the Bureau of Standards became known to a large number of American manufacturers that required limit gauges in the production of interchangeable parts for munitions of war. An organization was developed, and the apparatus, equipment, and methods in use are such as to permit the accurate and quick testing of various types of gauges; including screw-thread, plug, and ring gauges, profile gauges and plain gauges, as well as precision standards and measuring tools and apparatus. In addition to the Gauge Section at Washington, branch sections have been established in the Engineering Societies building, 29 West 39th street, New York city, in the Plymouth building, 22nd and Prospect avenue, Cleveland, Ohio. Up to the present time, the gauge-testing work of the Bureau has been, in nearly all cases, for the various departments of the Federal government or for manufacturing concerns that were executing war contracts. Recently, however, quite a number of gauges have been submitted by manufacturing concerns for work other than the production of war material for the Government.

Many inquiries have been received from manufacturers as to the possibility of the gauge work being continued. With the organization now available at Washington and the branch gauge-sections at Cleveland and New York, it will be possible to handle the routine test and certification of a number of gauges of all types. The future possibilities of this work, however, depend entirely upon the co-operation secured from manufacturers. The Bureau has accumulated a large amount of information and data on the construction, measurement, and use of all kinds of gauges, and it is planned to use the technical staff now available in the preparation of pamphlets and other literature in order to make this information accessible to American manufacturers. Furthermore, the staff will be engaged in research work; on steel treatment and methods used in the manufacture of gauges; in developing, perfecting, designing, and constructing simple forms of measuring instruments for shop use; and in arranging formulas, charts, and methods of computation in simplified form for the use of tool-makers and gauge-makers. Records of the experience and commercial practices gained by American manufacturers in the production of war material should be collected and co-ordinated for distribution, as this information would be of value to manufacturers in general.

A nominal fee will be charged for the routine test of gauges when the results of the test will be of benefit to but one or two parties. The amount of this fee will depend largely on whether the gauge is one that is easily measured, or is a complicated gauge requiring the expenditure of considerable effort. The fee will be based upon the accuracy of the test desired. The following schedule of fees is proposed: Plain plug-gauges, plain ring-gauges, snap gauges, and flat or round-end standards or checks, $0.50 each. Measurement of any one element, such as lead, angle, or diameter, of threaded plug-gauges, $0.50 each. Measurement of lead or angle of threaded ring-gauges, $0.50 each. Complete measurements of thread-gauges, $1 each. Photographs of form of thread of threaded-plug or threaded ring-gauges, $0.25 each. Profile gauges or fixtures, $1 up, depending upon the complexity.

Such gauges, instruments, or tools as may be submitted for test should be accompanied with drawings or specifications with which they are supposed to conform in order to facilitate the test and to permit the reporting of the important dimensions of the gauge submitted. Also, complete information should be included as to the route of the shipment of gauges, the nature of the test desired, and the disposal of the gauges after test.

The gauge shop was organized at Washington for the salvage of master gauges and for the manufacture of master and inspection gauges that were needed by the War Department in order to prevent stoppage of production, or for immediate use overseas. This shop will be used for the manufacture of such standard gauges as may be required for certain apparatus, such as complete sets of standards for the use of the Government and American manufacturers, like those designated by the National Screw Thread Commission. These standards will be deposited at Washington, and possibly extra sets will be available at the branch laboratories for use in connection with problems or disputes arising among manufacturers. It is proposed, also, that this shop be utilized for the building of gauges for manufacturers when the need is urgent, and when they cannot be secured from commercial sources. This shop offers, furthermore, an opportunity for the development and construction of experimental models in the form of shop apparatus, and for the carrying out of mechanical details in gauge research and investigation.

Manufacturers are urged to make use of the facilities of the Gauge Section to the fullest extent in connection with their work.

Generated on 2024-09-30 01:50 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Re-education for Victims of Industrial Injuries

By
DOUGLAS C. Mc MURTRIE*

THERE are three methods of reducing and perhaps virtually eliminating the cost of disability: first, accident prevention; second, thorough medical attention to minimize the disability resulting from the injury; and third, salvage of the remaining abilities of the worker through rehabilitation for self-support. The first of these has already received wide attention from employers and has wisely been encouraged financially by casualty-insurance companies and by State funds. The values of the two latter methods have, however, not been appreciated as yet. Energetic application of them would effect a large saving to industry.

Many injuries from which men would recover completely in a short time under adequate and high-grade medical attention are treated for an insufficient time, or by incompetent physicians and, instead of a prompt return to work, the case at best drags along over an extended period, and at worst becomes chronic or develops into permanent disability. Some States require the insurance carrier to provide only two weeks of compulsory free medical attention to the injured man. For the insurance company to take advantage of this limitation is a most short-sighted policy, because for every dollar saved in physicians' or hospital fees, the insurance carrier pays out ten dollars later in compensation. Furthermore, the cost to the insurance company is passed on to the insuring employers in their regular premiums.

Unlimited medical attention of the highest grade should be an axiom of casualty practice. It should be insisted upon by employer and workman alike. The best outcome of an injury is to have the employee return to his job as a well man in the shortest possible time. It is well to develop a science of dealing with cripples, but the ideal is to have fewer and fewer cripples with which to deal.

It is well to develop a science of dealing with cripples, but the ideal is to have fewer and fewer cripples with which to deal.

The third method of attack on the cost of disability is rehabilitation for self-support, the re-education of an injured man for an occupation that he can follow, or a process that he can perform in spite of his handicap. The science of rehabilitation is new, and the experience in it has practically all been gained in the effort to make sound and just provision for the disabled soldier or sailor. Every country among the recent belligerents is today operating a comprehensive system of re-education for disabled soldiers, and is placing upon that system more dependence than upon the pension system.

*Director Red Cross Institute for Crippled and Disabled Men.

Paying a man a small monthly or weekly stipend on which he is expected to live in idleness is not a constructive method. With the breakdown of confidence in the pension system, it was realized that the only real compensation for disablement is restoration of capacity for self-support. It was further realized that few jobs require all the physical faculties and that in the present-day variety of industrial processes, it is possible to find a job in which a man with a given type of disability can function 100% efficient. Some jobs are standing, some seated, others require walking about, some jobs at a bench working on small articles require but little strength, others involve great physical exertion. Still others do not require the sense of hearing, in others the sense of sight is not essential. Finding the future work of the disabled man, therefore, requires expert and painstaking choice, but a successful selection is possible even for the seriously handicapped. The first aim is to place the man back in a job in his own trade or in a trade closely related. In such a job his past experience will stand him in good stead. Failing this, he can be re-trained for a different line. The process of re-training the disabled is known as re-education, and can best be provided in a special school for crippled men. The first school of this kind in the United States is the Red Cross Institute for Crippled and Disabled Men, established in New York city through the generosity of Jeremiah Milbank. At this school, open to disabled civilians and soldiers alike, six trades are already being taught: artificial-limb making, motion-picture operating, oxy-acetylene welding, printing, jewelry work, and mechanical drafting. More will be added as the demand develops. Graduates are already giving satisfaction in the jobs they obtained, so the enterprise has passed the experimental stage. In the results attained with disabled soldiers abroad, there is overwhelming evidence of the logic and practicability of rehabilitation.

The only real compensation for disablement is restoration of capacity for self-support.

The cost of soldier rehabilitation is being met by the Federal government and by the governments of some of our Allies. It will be admitted without argument that it is desirable to have the advantages of re-education made available to disabled civilians as well, but will not the cost be prohibitive? The fact is that rehabilitation effects a reduction rather than an increase

Rehabilitation effects a reduction rather than an increase in the cost of disability to either the industry or the community as a whole.

Generated on 2024-09-30 02:01 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

in the cost of disability to either the industry or to the community as a whole.

A typical case will illustrate how the saving is effected. A worker in Massachusetts was injured by a fall while working inside a submarine and his hand became permanently crippled. In due course his compensation rate was determined and the insurance carrier was directed to pay him $10 per week for a long period, with a maximum total payment of $4000. Since the disability was manifestly permanent, the insurance company wrote the case off their books as a $4000 loss and transferred that amount to reserve to cover the weekly payments. After the compensation had been paid for nearly a year, a new official of the insurance company began looking over the list of men to whom the company was paying compensation. His attention was directed to the man in question and the latter was requested to call at the office of the company. The case was, like many thousands of others, susceptible of rehabilitation for self-support, so the insurance company official frankly suggested the following plan to the man. "I believe that you can be trained to earn a good living. I want you to understand clearly, however, that this proposal is to the financial advantage of the company, but I also believe it is to your advantage as well. A total income of $10 per week is not attractive to you and you would probably rather return to work at a good wage than remain idle. If you will consent, the company will send you to a school of re-education and see if we cannot get you back on your feet in good shape."

The injured man consented and the company sent him to the Red Cross Institute in New York. It paid him not $10 per week as required by law, but $40, $20 to him in New York and $20 to his wife at home. The company also paid his traveling expenses in both directions. In eight weeks he was re-educated in oxy-acetylene cutting and welding and returned home. He is now making not only a satisfactory wage but twice as much as he had ever earned before the accident took place.

In the whole transaction every party at interest was benefited. The man was benefited in that his general living standard was raised, while the necessity of working for a living cannot be considered as a hardship. The company paid less than $500 for his rehabilitation. This expense, together with the $500 already paid in weekly compensation during the first year of idleness, made a total of $1000. The company was thus enabled to charge $3000 of profit to the profit-and-loss account. The community was the gainer in that the man, formerly an unproductive consumer, became a useful producer instead. The community further gained in the elimination of the disabled man from the category of a prospective dependent, because, while compensation might have taken care of him in an insufficient way during the period of idleness, a time would have to come when compensation ceased, and he would then have been in a bad position—confirmed in habits of idleness, untrained for skilled work, and without any source of support.

A more intelligent handling of disability by insurance-carriers will, therefore, reduce their expense, and will thus cut the cost of casualty protection to the employer. There is needed also, however, some revision of compensation laws so that insurance carriers may be encouraged to offer opportunity of rehabilitation and definite inducements to the disabled men to take advantage of it. Practically every man receiving compensation that has come to the Red Cross Institute has come on the day his compensation expired. For one, two, or more years, the man has existed in idleness, drawing compensation, and cultivating habits of indolence. When his support was cut off, he then became interested in rehabilitation. Present compensation legislation tends to encourage the man to remain idle because his payments are reduced by any improvement in earning capacity. A revision of this practice will make for more constructive provision.

Present compensation legislation tends to encourage the man to remain idle because his payments are reduced by any improvement in earning capacity.

In short, the first effort should be to prevent injury, the second to minimize its permanent effects, the third, when disability has ensued, to offset its economic consequences. The execution of this complete program is not only sound humanitarian practice, it is good business as well.

Mrs. Hive: "Why are the children so much worse than they used to be?"

Mrs. Bee: "I attribute it to improved ideas in building."

Mrs. Hive: "How so?"

Mrs. Bee: "Shingles are scarce, and you can't spank a boy with a tin roof."

He came direct from London to work on one of the dairy-farms of Vancouver island. He was much disgusted when they put him to cleaning the dairy house instead of feeding the young 'cawlves.' Finally the man whose duty it was to feed the calves offered to exchange work with him one evening. Off he went with a pail of milk in each hand. Supper-time came but he had not returned from the calf-pen. I went out to see what the trouble was and met him coming back to the house with the two pails of milk still in his hands.

When questioned, he answered:

"They seem to be hungry, but they won't drink, you know."

"Did you give them your finger?"

"No, do you have to do that?"

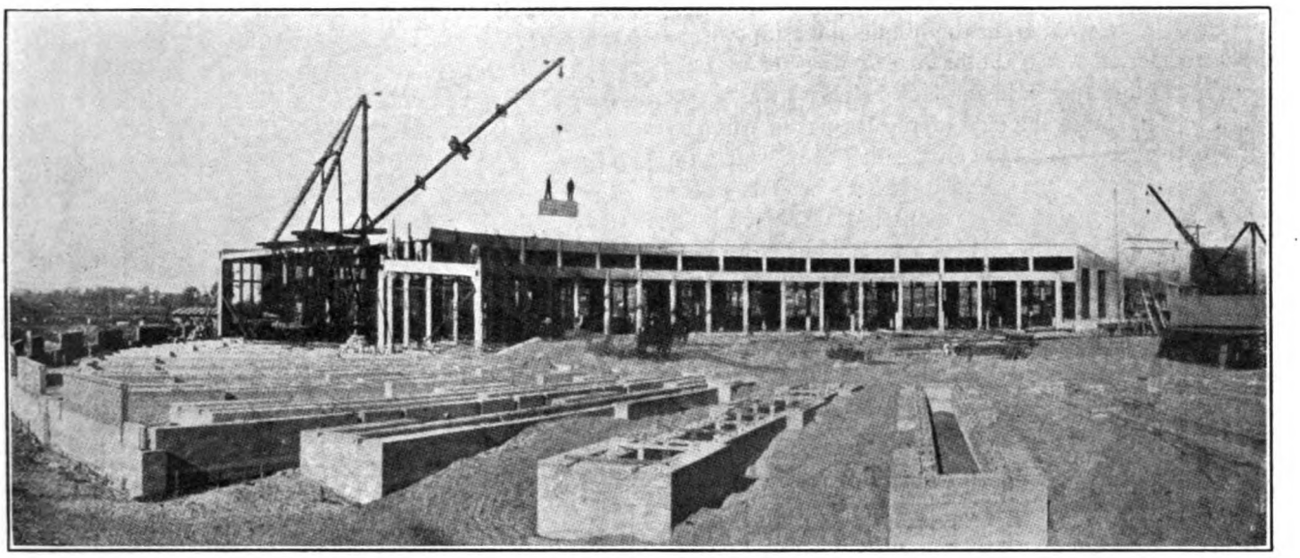
"Of course you do; young calves won t drink without it."

Back he went. After we had finished our supper we went out to the pen to see how he was getting on. There he was with his hands spread out before him and every calf which could get one, had a finger.

With a benign smile he said:

"They seem to be enjoying it, but really I cawn't see how it is very nourishing, you know."

Generated on 2024-09-30 01:46 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN



DERRICKS AND HOISTING APPARATUS ARE USED BY CONTRACTORS GENERALLY

The Contractor and the Metal Trades

By A. T. PARSONS

FIRST of all, what is a contractor? Most of the dictionaries say simply, "one who performs a contract," leaving us no distinction between the man who agrees to furnish 200 overcoats or 3000 brass globe-valves and the man who agrees to construct a building or a railroad. Ask the contractor himself at the end of a hard season, and he is likely to reply, "A contractor is a d——d fool." Ask some engineers and architects and the reply may be altogether unprintable. However, most of us know who the man that uses contractors' machinery is, even if it is hard to frame an accurate definition. The various branches of ordinary contracting merge into each other so that there is little if any advantage in distinguishing between them. One distinction, however, is of some value, namely between building contractors, who construct buildings, and so-called engineering contractors, who construct railroads, highways, street pavements, sewers, irrigation dams and canals, and similar structures. Even here, however, it is common for building contractors to bid on engineering structures, and for engineering contractors to erect buildings.

Until comparatively recent years, contractors' equipment was of the crudest possible type. William Hood, the present chief engineer of the Southern Pacific Co., states that the construction of the Central Pacific railroad in the 'sixties was done almost entirely with pick, shovel, hand-drills, and wheel-barrows. A few cuts in Utah were made with plows and scrapers, but no mechanical equipment was used on any part of the work. Probably the long distances from railroad facilities had something to do with this fact, but the general development of contractors' machinery may be said to have occurred within the memory of men now living.

Although a tremendous amount of construction work has been done on the Pacific Coast, the amount of contractors' equipment that has been manufactured here is almost negligible. There are several reasons for this, the principal one probably being the great variations in the amount of new construction, and consequently in the demand for machinery. In years when a great deal of new work is being started and a number of new contractors 'break into the game', besides the old ones who need additional machinery, the demand for, say, a certain type of steam-shovel may be considerable. The next year, work suitable for that class of machine may be so scanty that even if some contractor happens to need one, he will have no difficulty in buying or renting a second-hand shovel entirely satisfactory for his purpose, and the possibility of selling even one machine in the entire territory will be small. Under such conditions, even a company with a nation-wide market for its products finds it hard to weather the storm, and the outlook for building up a trade in contractors' machinery, particularly the more expensive kinds, in competition with established concerns has not been such as to encourage the Pacific Coast manufacturer.

Another important aspect of the general question of

Generated on 2024-09-30 01:49 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

the manufacture and sale of contractors' machinery is the credit problem. Contracting is a peculiarly hazardous occupation viewed from the financial standpoint. In most construction work, the hazard of weather alone, an almost negligible factor in most other activities, is great enough to determine the side of the ledger on which the balance appears. Then the contractor has to wait a long time for his money. If he is fortunate he gets part of his money before the work is completed, but often he has to wait until everything has been accepted before he receives anything. Again, many enterprises are of such a character that they cannot be financed at all unless the contractor takes his payment in bonds, for which, of course, there is not a ready market, or they would not have been forced upon him. The credit of irrigation districts in California used to be so shaky that until recent years the system of every district was built in this way. The Vrooman Act and its amendments governing street improvements in California is so worded that, while the contractor may not be obliged, in some cases, to take the bonds issued against the improvement, he always has to be ready to do so. Worst of all, particularly on public work, legal technicalities may prevent the contractor from getting his money at all.

There are, of course, some contracting firms possessed of sufficient capital or credit at the banks so that they can take all these risks and still pay cash for their machinery, but the number of such firms is relatively few. The story is told of a certain impecunious contractor who had had his bid accepted on an important job, and who went to his machinery dealer with a request for what seemed to the latter like a large extension of credit. After a frank discussion of the contractor's resources and prospects, the dealer suggested that, instead of the relatively small amount of capital the contractor possessed, he should have at least $25,000 in order to handle the work. "Hell," replied the contractor, "do you suppose that if I had $25,000 I would be contracting at all." Whether this story is true or not, contracting does not as a rule attract men of large resources, and the manufacturer that wishes to build up a trade in contractors' equipment must expect to extend long credit, or else sell through a jobber who is in a position to do the financing himself.

Many contractors manage to get along without purchasing much machinery of any kind, renting whatever they need. This is particularly true of special equipment that is suitable for only one kind of job and which the particular contractor may not be able to use again. The manufacturer that arranges to rent his equipment broadens his possible market. On the other hand, it is an open question whether or not a rental agency can be run advantageously in connection with a factory.

For many reasons, including those already mentioned, the possible market for many types of contractors' machinery on the Pacific Coast is so small that the local manufacturer would be foolish to enter the field, and such machinery will not be considered in this article. However, other machinery and equipment is in such general use that there is a possibility of trade development. Without trespassing on the domain of prophecy, let us consider the particular branches of construction work that are likely to be most active on the Pacific Coast during the next few years.

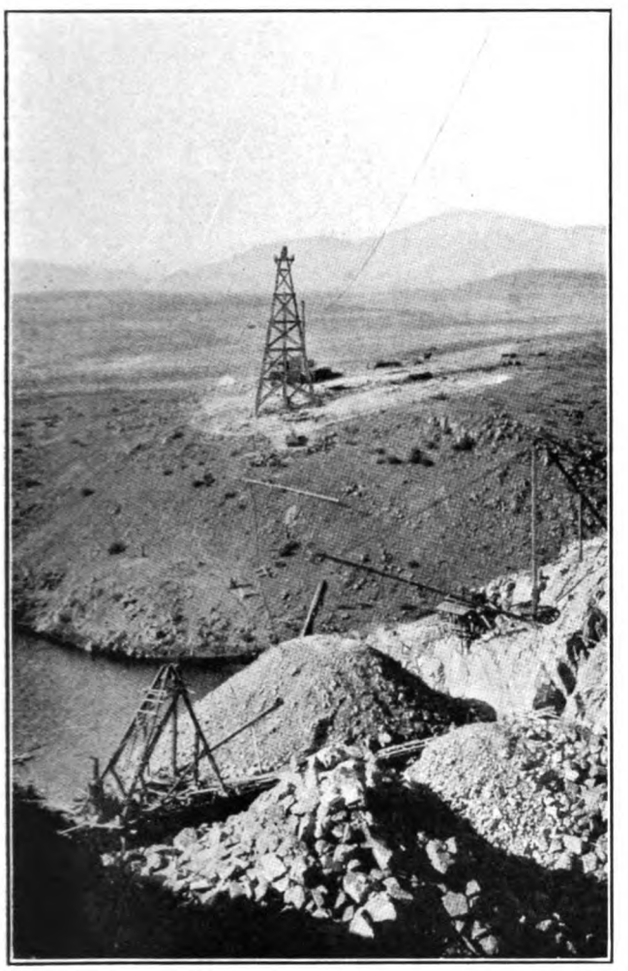
First of all will probably come highway work, including street construction. The 'good-roads' movement was retarded during the War, but, at the same time, the burden placed upon the highways by the transportation needs of the war industries emphasized the importance of highway improvement, and we may expect activity in that line before long. Already there is talk of a $10,000,000, $20,000,000, or a $30,000,000 State highway bond issue in California in addition to the $15,000,000 voted two years ago and only partly expended. County and municipal work may be expected to be proportionately large.

The principal divisions of a highway job are grading and surfacing. Although some mountain roads require

THE GENERAL PUBLIC IS ANXIOUS FOR IMPROVED HIGHWAYS

Generated on 2024-09-30 01:56 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

heavy equipment similar to that used in railroad work, grading on highway and street work is generally relatively light. Labor costs are, and probably will continue to be, too high to permit much hand work. Where conditions are favorable, a light revolving steam or electric shovel of the traction type, with a bucket capacity between ½ and 1 yd., depositing the material either in its final position, or else in a motor truck, will probably be the preferred machine, and many shovels of this type are going to be sold. In some places, soft or sandy ground may require a tractor or even the old-fashioned mule instead of a motor truck. The possibilities of tractor-



DAM CONSTRUCTION REQUIRES APPARATUS FOR EXCAVATING AND TRANSPORTING LARGE AMOUNTS OF MATERIAL

drawn plows and scrapers for some classes of grading formerly done by animals have not been fully investigated. Some modification of the grading tools used with the tractor from the designs developed for animal-power will probably be needed.

While some blasting is required on most highway contracts, the powder work is so scattered that machine-drilling equipment is not economical. In fact, except on occasional tunnel jobs, such as the Twin Peaks tunnel, or the Hetch-Hetchy conduits, the market for machine-drills or compressors in construction work is negligible.

Surfacing in these days usually means a concrete pavement with or without an asphaltic surface, although some water-bound macadam and oil-macadam roads are still being constructed. The concrete-mixer is the principal machine used. For highway work it is usually mounted on the same truck with the engine that drives it, and is of the traction type. The particular demands of highway work are such that a contractor who has any amount to do, must purchase a type of mixer that is not economical for most other concrete construction, such as buildings and bridges. To supply water for the concrete work it is usually necessary to place a temporary pumping-plant at some point of supply and run a pipe along the line of the work.

The amount of material required for pavement construction makes the transportation problem of importance on a highway job. Some contractors even build a complete industrial railroad along the line of the work, but more often motor-trucks or tractors are used. On large jobs the efficiency of the loading and unloading machinery may be the factor determining whether the ledger-balance shall be written in red or in black ink. In fact, on any contract work where large quantities of material or machinery have to be hauled any considerable distance from the railroad, the equipment for transportation and handling is of importance.

Closely allied to highway construction is highway maintenance. Maintenance is something that must continue indefinitely, so there is a fairly steady market for equipment of this kind. Furthermore, while a contractor who has a small job may find it most economical to do the work with hand tools, it usually pays to have good equipment for maintenance. It is true that a considerable campaign of education is still needed before many highway officials can be brought to appreciate this fact. Road-graders, portable heating and spraying outfits for road-oil, portable asphalt-plants, and portable mixers for patching concrete pavement are also used on construction, but their principal use is on maintenance.

Next in importance to highway construction comes irrigation work. The farmer may not be so much of a profiteer as some people claim, but the prices he is obtaining for his products are sufficient to encourage not only new irrigation projects, but also the improvement of existing projects so that the water supply may be more abundant and more reliable. Irrigation projects are of two general classes, gravity projects and pumping projects.

While some of the earlier water diversions were made direct from the stream or lake, the opportunities for systems of this kind have long since been exhausted and any new gravity project requires large expenditures for diversion and storage dams. Usually these will be of concrete, although some earth or rock-fill dams are constructed. The principal machinery used is apparatus for the excavating and transporting large amounts of material for relatively short distances, and also concrete-mixers in the case of concrete dams. While the total amount of this work is considerable, the market for equipment that it affords is comparatively small.

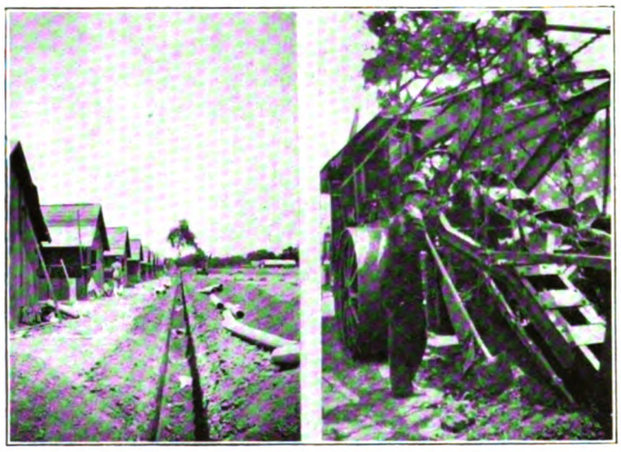
Generated on 2024-09-30 01:50 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

On the other hand, the construction of irrigation ditches requires a good deal of machinery that can be standardized and produced in quantity. While the large ditches are excavated by steam-shovels or some type of dredge or drag-line excavator, most of the smaller ones have in the past been built with teams. It is doubtful whether this will continue in the future. The various types of templet ditchers are likely to do most of the work on the medium-sized canals. Special V-plows are

EQUIPMENT FOR TRANSPORTATION AND HANDLING IS OF IMPORTANCE ON ALL CONTRACT WORK

probably the best type of machinery for the smaller ditches.

The increasing value of water has led, on many systems, to the reduction of seepage-losses by the use of concrete lining, but there are hundreds of miles of earth ditches still to be lined. A traction-type mixer equipped to run on the ditch-bank and to spout concrete at least as far as the middle of the ditch is a useful machine for the contractor in this line. Such a mixer can generally be



THE TRENCHING-MACHINE IS RAPIDLY SUPPLANTING HAND WORK

used for replacing wooden head-gates and similar temporary structures with permanent concrete ones, which is also a class of work for which there is much demand.

The ditch system for a pumping project does not differ from that for a gravity project. The pumping plants required offer an important market for pumps, motors, and engines. Pumping projects and sometimes gravity projects also, offer a limited market for wood-stave, riveted-steel, and in some cases, cast-iron pipe.

Closely allied to irrigation work is municipal water-supply. While the construction of new systems for towns or water companies does not happen often, the extension of water-mains continues all the time, or did until the War brought municipal work to almost a complete stop. The trenching-machine is rapidly supplanting the old method of digging pipe-trenches by hand, and the same is true of sewer work.

The use of oxy-acetylene welding for making joints and connections in gas-mains is now common, and it is probable that this will extend to wrought-iron and steel pipe for other uses, possibly even to cast-iron pipe. Oxy-acetylene welding outfits can therefore be classed as contractors' machinery, and it is entirely possible that electric welding may also be used on this class of work wherever current is available.

Hydro-electric development resembles irrigation work in some particulars. The storage-dams usually required are generally in rougher and less accessible country than on irrigation work. Where conduits are needed, they are

OXY-ACETYLENE WELDING IS OFTEN USED IN PLACE OF THE OLD METHODS OF MAKING PIPE-JOINTS

usually on steep side-hills where there is little opportunity for the employment of machinery. Pipe for penstocks, power-house machinery, and transmission-line material do not come within the scope of this article.

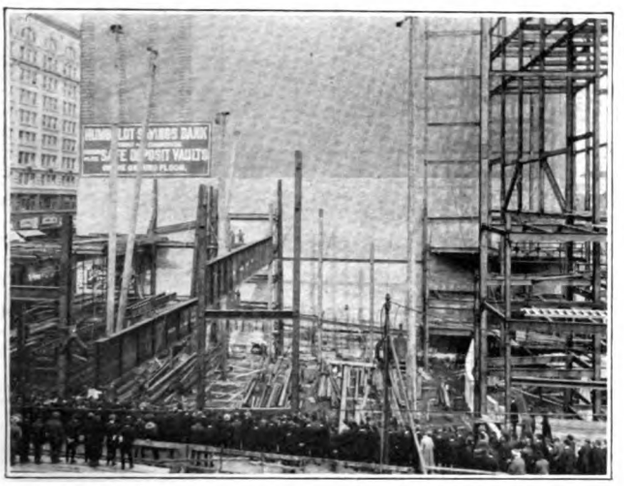
Needless to say, the railroads must know 'where they are at' before attempting new construction or improvements. Even when this happy day arrives there will be many things to discourage new construction. Automobile competition has nearly bankrupted the electric railroads and the short-line steam roads already existing, so there is little incentive to build new branch lines. Neither is there call for new main-line construction. Much improvement and double-tracking of existing main lines is needed and will be done gradually, but the machinery used will be mainly of special kinds that it would be foolish for the Pacific Coast manufacturer to attempt to make.

River and harbor work comprises another department of contracting where the opportunities for the sale of complete machines is small, although the dredge is one

Generated on 2024-09-30 01:46 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

of the few kinds of contractors' machinery that is made locally to any extent. There is, however, a considerable market for the furnishing of replacement parts and for repairs of suction, dipper, and other types of dredges.

The construction of the ordinary small residence or store-building does not require the use of much equipment other than a set of carpenter's tools. The time is undoubtedly coming when the growth of the Pacific Coast



THE CONSTRUCTION OF LARGE BUILDINGS CALLS FOR CONSIDERABLE MACHINERY

communities will again require the construction of many large buildings for offices and other purposes, and there will then be a considerable demand for the kinds of machinery needed for this work, but it is hardly worth while to sit down and wait for it.

There are some kinds of machinery in such general use by contractors in all lines, that even if they are used in other activities besides contracting, special types have

UNUSUAL JOBS CALL FOR SPECIAL MACHINERY

been developed for the contractor. These include hoists, derricks, cranes, and portable pumps for keeping excavations dry.

The contractor is 'here today and gone tomorrow', and the cost of moving and setting up his equipment, even on a job in a city, is frequently the principal item of expense. Therefore, the question that the contractor and, indirectly, the designer of contractors' machinery must ask is not, 'What will the saving be for this machine after it is set up and going well over hand work?' but 'What will the saving be after the cost of moving in and out, interest, depreciation, and other charges are deducted?' Furthermore, the machine that works well under ideal conditions in the hands of a skilled operator, may fall down utterly after it has been set up '20 miles from Nowhere' and placed in the hands of whatever man may be available for the work. These statements sound like truisms and they are, but they have been often ignored by both the contractor and the designer of machinery.

Basic Refractories in the Open-hearth Process

A paper recently presented before the American Institute of Mining Engineers by J. S. McDowell and R. M. Howe describes an investigation of the properties of different refractory materials. In the table below, material *A* was prepared from Washington magnesite, ground with ferric oxide, and dead burned. *B* was a similar product prepared from Canadian magnesite. *C* was prepared by coating dolomite granules at a high temperature with basic open-hearth slag. *D* was made by mixing iron oxide and dolomite and calcining at a high temperature. *E* was a rather impure dolomite that had been calcined. *F* was a relatively pure calcined dolomite. They were tested for slaking, for strength at high temperatures, and for general resistance to heat and to reaction with fire-clay and silica brick. The results showed that *A* was the best refractory material, then *B*, and so on, until *F* was the poorest.

Analyses of Basic Materials

	A	B	C	D	E	F
Moisture and ignition loss, %	0.43	0.33	0.47	1.00	3.70	9.90
Silica, %	7.36	4.56	11.46	9.84	6.68	2.16
Alumina, %	2.33	2.08	3.91	1.86	3.89	0.90
Ferric oxide, %	4.81	7.88	4.41	4.54	1.69	1.10
Lime, %	3.12	18.94	47.92	48.70	49.84	51.00
Magnesia, %	81.60	66.40	32.10	34.73	34.50	34.85
Total	99.63	100.19	100.27	100.67	100.30	99.91

Shimer Case-Hardening Process

A new process of case-hardening recently patented by P. W. Shimer, of Easton, Pennsylvania, is described in a paper presented by Joseph W. Richards before the American Institute of Mining Engineers. The articles to be hardened are immersed in a bath composed of easily fusible salts such as sodium chloride, calcium chloride, and barium chloride, to which is added about 5% by weight of calcium cyanamide, which latter substance imparts case-hardening properties to the bath. Upon removal from the bath the articles to be case-hardened are quenched in the same way as when potassium cyanide or sodium cyanide are used. The Shimer process is cheaper than the old method and is also better for the health of the workmen on account of the poisonous gases given off when potassium cyanide or sodium cyanide are used.

Generated on 2024-09-30 01:47 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

The New Income-Tax Law

CONGRESS has finally passed the income-tax law, and as returns must be filed on or before March 15, it is advisable for individuals and corporations to lose no time in making up their statements. The bill income for the year 1918.

In general, taxes will be materially higher than last year. The exemptions for personal income are substantially the same as last year, $1000 for a single person, $2000 for a married person, or married couple when both husband and wife have an income, plus $200 for each dependent child. The new act also provides for exemptions under certain conditions for dependents other than children at the rate of $200 for each dependent. The first $4000 of income above the exemptions is taxable at the rate of 6%, while everything in excess of $4000 is taxable at the rate of 12%. The surtax is levied on all incomes exceeding $5000 more than the exemptions. On the first $1000 after the exemption the rate is 1%. For every $2000 additional the rate is increased 1%. The total individual tax for various incomes is as shown below.

Taxable income (after exemptions)	Normal tax	Surtax	Total tax
$5,000	$360	....	$360
10,000	960	$110	1,070
20,000	2,160	710	2,870
30,000	3,360	1,810	5,170
40,000	4,560	3,410	7,970
60,000	6,960	8,110	15,070
80,000	9,360	14,810	24,170
100,000	11,760	23,510	35,270
150,000	17,760	49,510	67,270
200,000	23,760	77,510	101,270
300,000	35,760	137,510	173,270
500,000	59,760	263,510	323,270
1,000,000	119,760	583,510	703,270

The taxpayer must ascertain accurately his gross income from all sources for 1918, including his salary or wages, overtime pay, and any bonuses received as additional compensation. A married person having children under 18 who are working should include the earnings of such children.

If he sold any property at a profit, the gain must be computed and included in gross income. If he rented any property to other persons the total rents received in the year must be ascertained, and from that figure a deduction may be taken for taxes paid on rented property, the necessary minor repairs, fire insurance, any interest he may have paid on mortgage, and a reasonable allowance for annual wear and tear of the rented property. The balance is included in gross income for the year.

Interest on bank deposits, whether withdrawn or added to bank balances, must be included in all calculations of income. Bond interest received during the year must be included, except interest on municipal, county, or State bonds.

Government bonds other than the Liberty issues as well as those of the First Liberty Loan are tax-exempt. The regulations regarding bonds of the other Liberty issues are quite complicated, and are likely to be further modified when the Fifth Loan is floated. As far as tax returns for 1918 are concerned, the maximum amount of tax-free Liberty Bonds other than those of the first issue that any taxpayer may hold is $110,000, distributed as follows:

First 4s, Second 4s., First 4¼s, First Liberty Second Converted 4¼s, Second 4¼s, Third 4¼s, Fourth 4¼s, U. S. Certificates of Indebtedness, War Savings Certificates, or War Savings Stamps	$5,000
First 4s, Second 4s, First 4¼s, Second 4¼, or Third 4¼s (This is conditional upon a subscription of $30,000 to the Fourth 4¼s, said $30,000 of bonds to be held continuously until the date of making tax returns.)	45,000
Fourth 4¼s	30,000
First Liberty Second Converted 4¼s secured as a result of converting a like amount of Liberty 3½s	30,000
Total	$110,000

Dividends on stock shares are income, and must be included in the gross figures, although the law does not impose the normal tax on distributions made by domestic corporations.

A person buying and selling merchandise must find his profits for the year on the following basis: First, ascertain the gross sales or total cash receipts. Then add together the inventory at the beginning of the year and the purchases of goods for re-sale. From this latter sum, subtract the inventory of goods on hand at the year's end, and the result is the cost of goods sold. This cost, plus necessary expenses incurred solely in conduct of the business, is to be deducted from the gross sales, and the result is the net earnings of the business.

A professional man arrives at his professional income by ascertaining the total of fees for services and deducting therefrom all expenses connected directly and solely with his practice.

Contributions or gifts actually made in 1918 to organizations operating exclusively for religious, charitable, scientific, or educational purposes, and to societies for the prevention of cruelty to children or animals, may be deducted, to an amount not exceeding 15% of the net income computed without the benefit of this deduction.

Gifts and bequests can be eliminated: also proceeds of life insurance received by the beneficiary of an insured person. A person who cashed an endowment policy need report as income only that portion which exceeds the total of the premiums he paid in all years on that policy. Annuities are not taxable, unless the person received in the year payments which represent, when added to all prior payments on the annuity, an amount greater than the original cost of the annuity. Dividends or unexpired life insurance policies are not taxable income; but dividends on paid-up policies must be considered income. Alimony is not income to the recipient, nor is it an allowable deduction on the part of the person who pays.

From the total of all items of income there are certain deductions allowable by law. All interest paid on per-

Generated on 2024-09-30 01:53 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

sonal indebtedness and all taxes paid during the year are deductable, except federal income and excess profits taxes, inheritance taxes, and assessments for local improvements, such as sidewalks, sewers, etc. Losses incurred in business or trade are allowable, also losses arising from fires, storms, shipwrecks, or other casualty, or from theft, in cases where such losses are not compensated by insurance or otherwise. Debts due to the taxpayer actually ascertained to be worthless during the year are deductible.

Depreciation on property used in a profession, in business, or in farming is another item that may be claimed as a deduction. The storekeeper may claim depreciation on his fixtures, and on his delivery horses and wagons, but not on his stock held for sale. The professional man may claim similar deduction on his instruments.

Unlike the previous law, the regulations for individuals apply to the members of a partnership. Furthermore, partnership profits are taxable, even if they are left in the business. The excess profits provision as applied to individuals and partnerships is eliminated in the present law. The deductions for taxes, depreciation on property, etc., are the same as under the old law, with the important exception that losses sustained not connected with the principal trade or business of the taxpayer may be deducted in determining net income. Special provision is made in the new law for extraordinary depreciation of buildings and machinery used in war industries and now scrapped or reduced in value on account of cessation of war orders.

Another section of the new law provides for the special case where a partnership is dissolved during the year, and the members engage in further business with consequent gains or losses. In this case the gain during one part of the year may be balanced against the loss in the other part. Another important deduction provides for the correction of inventory valuations used at the close of a previous year in accordance with reduction in prices during that time. This provision will probably be more important next year than this, in case the expected drop in prices comes.

Individuals are permitted, if they so desire, to file their returns on the basis of their business fiscal year, rather than the calendar year. This privilege was formerly extended only to partnerships and corporations. This will permit them to close their books at a favorable time. Probably the most important change of all is the provision for payment in installments, instead of a lump sum as heretofore. The tax is payable in four equal installments, the first installment to be paid at the time fixed by law for filing the return, the second on the 15th of the third month following, the third on the 15th of the sixth month, and the last on the 15th of the ninth month. Where an extension of time is granted for filing the return the date of the expiration of the extended period shall be deemed the time fixed for filing the return. Where an extension is granted, interest shall be added to each installment at the rate of ½% per month from the time it would have been due had no extension been granted, to the time of payment. This provision is practically inoperative for taxes for the year 1918, since it has been announced that no extensions beyond March 15 will be granted.

The corporation tax is divided into two parts, normal income tax and war excess profits tax, which latter in turn is computed in two ways. The normal tax is 12% of the net income after deducting from such income the war excess profits tax, plus a specific exemption of $2000.

The war profits tax is 80% of the difference between the net income for 1918 and the sum of the following: (1) The average amount of profits for the years 1911, 1912, and 1913; (2) 10% of any increase of invested capital for 1918 as compared with the so-called prewar period of 1911, 1912, and 1913 (or less 10% of any decreased capital); (3) a $3000 specific exemption. The sum of these three is the so-called war-profits credit, or the amount of income not taxable under this head.

In figuring the excess profits tax, 8% is considered a reasonable return on invested capital, plus $3000 specific exemption. This is the excess-profits credit and represents the amount of income not taxable under this head. The remainder of the income is taxable under certain fixed percentages, known as the 'first bracket' and the 'second bracket'. The first bracket provides for a tax of 30% on income in excess of the excess profits credit, but not exceeding 20% on the invested capital. The second bracket provides for a tax of 65% on all net income in excess of 20% on the invested capital.

Invested capital, for the purpose of the excess profits tax is defined as:

(1) Actual cash bona-fide paid in for stock or shares.

(2) Actual cash value at the time of purchase of tangible property, other than cash bona-fide paid in for stock or shares, but in no case to exceed the par value of the original stock or shares specifically issued therefor. If the value of the property at the time it is paid in, is clearly in excess of the par value of the shares issued therefor, the excess will be treated as paid-in surplus.

(3) Paid-in or earned surplus and undivided profits, not including surplus and undivided profits earned during the year.

The invested capital as made up of these three elements must be adjusted according as the capital is invested in inadmissible assets, that is, assets (except obligations of the U. S.) the income from which is not included in computing net income. If a trading profit results from dealing in inadmissible assets, a corresponding part of the capital invested in such assets may be included in invested capital.

The present law provides that in the case of the sale or other disposition of property, real, personal, or mixed, acquired prior to March 1, 1913, the gain or loss shall be determined on the basis of the value at that date; if acquired subsequent to March 1, 1913, the gain or loss from sale or other disposition will be computed upon the basis of cost.

This rule is so modified in the pending bill as to provide that the surtax, or the excess profits tax, imposed on

Generated on 2024-09-30 01:47 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

profits resulting from the sale of mines, oil or gas wells, or any interest therein, the principal value of which has been demonstrated by prospecting or exploration and discovery by the taxpayer, shall not exceed 20% of the selling price of such property.

As a further protection to the small corporation there is a limitation of the war excess profits tax which provides that the war excess profits tax shall not exceed 30% of the net income in excess of $3000, and no greater than $20,000 plus 80% of the amount of net income in excess of $20,000.

The following examples will illustrate the application of the law:

John Jones is a factory superintendent with a salary of $6000 per year and no other income. He has a wife and two dependent children, and pays $50 in city and county taxes. He computes his income-tax as follows:

Income		$6000
Deductions (as married man)	$2000	
" for two children	400	
" for taxes	50	2450
Taxable income after deductions		$3550
Tax (6% of $3550)		$213

If he makes $500 'on the side' his taxable income is increased to $4050 and he pays 6% on $4000 and 12% on $50, or $246 in all. If he makes $500 on one line of ventures but loses $2000 on another, his net taxable income is reduced $1500, making it $2050, and his tax becomes $123. If, in addition, his wife has an income of $500 per year, their total taxable income is increased to $2550, on which $153 income tax must be paid. Finally, if on some other business venture during the year he sustained a net loss of $2500, he is entitled to deduct that amount from his taxable income, leaving $50, on which the tax is only $3. If property he owns has depreciated in value $500 or he has sold property during the year at a loss of $500, compared with its value on March 1, 1913, if purchased before that time, or its cost if purchased since then, his taxable income is more than wiped out, and he must file a return, but has no tax to pay.

Coming to the rare individual who has an income of $24,000 after deductions as set forth in the preceding paragraph are made, his normal tax is 6% on $4000 or $240, plus 12% on $20,000 or $2400, making a total of $2640. The sur-tax is 1% on the first $1000 over $5000, 2% on the next $2000, 3% on the next $2000, etc., or $1090 in all, making a total tax of $3730.

Turning to partnerships, assume that John Jones' share of the profits of the firm of Jones, Brown & Co. is $32,500, but that, for various reasons, he has drawn out only $5000 during the year. Let us also assume that a computation of outside income and deductions gives $2500 for net deductions. His taxable income is $30,000 and he must pay a total of normal tax and sur-tax of $5170, or more than he has drawn from the firm during the year. However, he will not be obliged to pay this at one time, but can make a payment of $1392.50 on March 15, June 15, September 15, and December 15, respectively.

If the firm of Jones, Brown & Co. dissolved partnership during the year 1918, John Jones' share of the profit being $18,000, and John Jones engaged in no other business before January 1, 1919, his taxable income would be $18,000, subject to the usual deductions and other modifications. If, however, he engaged in business and suffered a loss of $8000 during the remainder of the year, his taxable income would be $10,000, subject to the modifications already noted. Similarly, if the firm experienced losses before the dissolution of partnership, of which John Jones' share was $5000, and he engaged in other business and obtained a net income of $10,000 for the remainder of the year, his taxable income would be $5000, subject to modifications as before.

Turning to corporations, suppose the Jones Foundry Co. has a capital investment of $100,000 during 1918, and made a profit of $15,000. Its capital in 1911, 1912, and 1913 was $50,000 and its average profit was $5000. Its war profits credit is then composed of $3000 specific exemption plus $5000 average profits during pre-war period plus 10% on increased capital, making a total of $13,000. The amount subject to war profits tax is then $15,000 – $13,000 = $2000. The war profits tax then is $1600.

The excess profits credit is composed of $3000 specific exemption plus 8% of capital invested or $11,000 in all, leaving $4000 subject to excess profits taxation. As this is less than 30% on invested capital, the excess profits tax is 30% of $4000 or $1200. This amount is less than the war profits tax, as computed above, so the company pays the war profits tax.

The normal income tax is obtained by taking 12% of the net income less the sum of amount paid as war profits tax or excess profits tax, whichever is paid, and a specific exemption of $2000. In this case it is 12% of $15,000 – $3600 or $1368. The total tax the company pays is $1600 plus $1368 or $2968.

If, however, the $15,000 was the company's income before deducting depreciation on buildings and equipment, including special tools bought for Government orders and now of little more value than scrap, and also before an allowance is made for the fact that the market value of the company's goods listed in the inventory has fallen, a correction may be applied to income. Assume that depreciation figures $4000 and loss on inventory values $1000. Then the net income is $10,000, which is less than either the war profits credit or the excess profits credit. The company is then called upon to pay only the normal tax of 12% of $10,000 minus the exemption of $2000. The tax is therefore $960.

Suppose, however, that the company has been more fortunate and has a net income, after all deductions, of $75,000. Then the war profits credit is computed as before and amounts to $13,000. The remainder subject to war profits tax is $62,000 and the war profits tax is $49,600.

The excess profits credit is $11,000 as before, and the amount subject to excess profits tax is $75,000 minus $11,000 or $64,000. The excess profits tax is as follows:

Generated on 2024-09-30 01:47 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

30% on the first $20,000 (20% on invested capital)	$ 6,000
65% on the remaining $44,000	28,600
Total excess profits tax	$34,600

The war profits tax is the larger and is the one paid by the company.

However, under the special provision already noted, the war excess profits tax shall not be larger than the sum determined by the following method:

	Income	Tax
Exempted	$ 3,000	None
Taxable at 30%	17,000	$5,100
Taxable at 80%	55,000	44,000
Total	$75,000	$49,100

This is less than the war profits tax computed by the ordinary method, and is therefore the tax paid by the company. The normal tax is computed as follows:

Income		$75,000
Exemption	$ 2,000	
War excess profits tax	49,100	
	$51,100	$51,100
Subject to normal tax		$23,900
12% normal tax		2,868
War excess profits tax		49,100
Total tax paid by company		$51,968

Suppose, on the other hand, that the company had an average net income of $30,000 during the pre-war period. Then its war profits credit would have been as follows:

Exemption as before	$ 3,000
10% on increased capital as before	5,000
Average pre-war profit	30,000
Total war profits credit	$38,000

The war profits tax would be 80% of the remaining $37,000 or $29,600. The excess profits tax would be as before, $34,600, and the company would pay this amount, being the larger of the two. The normal tax would be 12% of $75,000 – $36,600 or $4608. The total tax would be $34,600 plus $4608 or $39,208.

The question of deductions for salaries under the new law is of no consequence as far as individuals in business for themselves or partners is concerned, since whatever income they obtain from their business is taxable, whether it is called a salary or not. It is, however, important for corporations, on account of the war excess profits tax. In general, the Treasury Department officials have been inclined to allow salaries, even liberal ones, as deductions, where the income of the company and the services of the individual appeared to warrant them. Part of decision No. 2696 of the Department regarding salaries indicates the circumstances under which salaries will not be allowed as deductions, as follows:

"Any amount paid in the form of compensation, but not in fact as the purchase price of services, is not deductable.

(*a*) An ostensible salary may be a distribution of a dividend on stock. This is likely to occur in the case of a corporation having few stockholders, practically all of whom draw salaries. If in such a case the salaries are based upon or bear a close relationship to the stockholdings of the officers or employees, it would seem likely that the salaries, if in excess of those ordinarily paid for similar services, are not paid wholly for services rendered, but in part as distribution of earnings upon the stock.

"(*b*) An ostensible salary paid by a corporation may be in part a waste of appropriation of assets of the corporation. This may occur where salaried employees are in control of the corporation through holding directly or indirectly a majority of its stock or, in the case of a large corporation with many stockholders, owning a substantial minority of its stock, and the tendency of the officers unduly to inflate their salaries must be taken into account. If a compensation contract with the majority stockholder or stockholders is approved by all the stockholders, as well as by the directors, it might, however, be dealt with like any other contract.

"(*c*) An ostensible salary may be in part payment for property. This may occur, for example, where a partnership sells out to a corporation, the former partners agreeing to continue in the service of the corporation. In such a case it may be found that the salaries of the former partners are not merely for services, but in part constitute payment for the transfer of their business.

"(*d*) In the case of excessive payments by corporations, if such payments correspond to or bear a close relationship to stock holdings, the amount of the excess should be treated as dividends and would thus be exempt from the normal tax in the hands of the recipient; or if such appropriation of assets of the corporation by officers who control it and fix their compensation in violation of the rights of the corporation, the amount of the excess, while, disallowed as a deduction by the corporation, should be treated as compensation of the individuals . . . compensation illegally secured being none the less subject to tax in all respects; or if such payments constitute in part payment for property, the amount of the excess should be treated by the corporation as a capital expenditure and by the recipient as part of the purchase price."

Use of Manganese Alloys in Open-Hearth Practice

In a paper recently presented before the American Institute of Mining Engineers, Samuel L. Hoyt made the following recommendations for the conservation of manganese in open-hearth practice and the improvement of the product, using domestic alloys:

1. The use of a molten spiegel mixture for deoxidation and recarburization.
2. The practice of melting and refining the steel bath so as to secure a comparatively high residual manganese content, about 0.3% manganese.
3. The use of manganese alloys containing silicon.

It's kind of tough when a fellow gets a big order and 'stints' around and looks up a lot of material, builds a few flasks, 'sasses' an old customer, and writes for catalogues of expensive equipment, and then gets a nice letter explaining why it becomes necessary to cancel the order.

Generated on 2024-09-30 01:50 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Electric Welding

At a meeting of the San Francisco Section of the American Society of Mechanical Engineers, held at the Engineers' Club on February 13, an address on 'Electro-Arc Welding' was delivered by F. A. Anderson, electric inspector for the U. S. Shipping Board. Mr. Anderson discussed the fundamental principles underlying both resistance and arc welding and showed a number of slides of various welding jobs, among them being the welding of heavy flanges on a short piece of 6-in. pipe. When this job was tested to destruction, the bolts failed and the flange 'dished' over an inch before the weld failed, although when the weld finally failed it was seen that the weld was not a good one, being only about 25% efficient. A difficult job in repairing a large engine-frame was also shown. Another set of slides showed the apparatus used by the United Railroads in repairing broken and worn rails and switches in place. This equipment uses a 550-volt current, although only about 18 volts is actually employed effectively. Mr. Anderson, while not recommending this high voltage, called attention to the fact that the results were good in spite of the low efficiency.

In the discussion that followed many interesting points were brought out, some in replies by Mr. Anderson to questions, and some in statements from those in the audience. No definite decision has been reached by the authorities regarding the best kind of electrode to use. Mild steel is used for most ordinary welding but it is probable that a proper adjustment of the current and arc will permit the use of any metal. No difficulty is found in welding manganese-steel up to ½% manganese. Probably the greatest variety of electric-welding work has been done on the Chicago, Rock Island & Pacific railroad under the direction of E. E. Wanamaker, who has even made repairs of high-manganese steel special track-work. Alternating current can be used for arc welding, but it requires greater skill on the part of the operator than does direct current. Alternating current is, of course, preferable for resistance welding. There seems to be little difference in the efficiencies of welding by the various approved methods, satisfactory results being obtained by any of them given proper care by the operator. Efficiencies in the weld ranging from 50% to 100% have been obtained by the Bureau of Standards for arc welding. Good results with the so-called 'Quasi' arc depend largely upon the skill of the operator in keeping the slag floating on the top of the weld. For malleable castings, the preferred practice is to use electric welding for thin castings and oxy-acetylene welding for the heavier work, although it is entirely possible that ultimately methods may be developed that will make electric welding the best for all classes of this kind of work.

In this connection, Mr. Brown of Brown Bros. Welding Co., mentioned the good results that he had obtained in 'filling up' rear-axle housings of malleable iron that had been mis-machined. At first he used tobin bronze for this work but this gave a hard bonding line that would wreck the reamer when the work was machined finally. Later he used ordinary welding-rod for the electrode and got a good weld and an easily machined job.

W. A. Brewer showed some specimens of small welding jobs including welding coils of nickel wire to nickel, aluminum to nickel, and several other metals. This welding is done by girls, and about one million welds have been made. The time for each weld is ⅕ to ¼ second. He also mentioned the welding of wire cable into an endless rope as another application of electric welding.

The satisfactory results obtained by the Pacific Gas & Electric Co. in the use of oxy-acetylene welding for gas-mains was mentioned. One of the most interesting jobs done by the company was the laying of a welded main across the Oakland estuary. This main was subsequently broken through no fault of the welding and the pipe was raised and welded again, the work being done on a raft under exceptionally unfavorable conditions, the wash from vessels going up and down the estuary being particularly troublesome.

In response to an inquiry regarding the relative cost of electric and oxy-acetylene welding, Mr. Anderson gave figures showing a lower cost for oxy-acetylene for thin material, up to $\frac{1}{16}$ or ⅛ in., but above that a lower cost for electric welding, the difference increasing rapidly until for thick plates the cost for oxy-acetylene is five to ten times the cost for electric welding.

Several of the audience mentioned the great difficulty in detecting a poorly made weld by inspection. Mr. Anderson, while maintaining that the skilled inspector can detect most poor welds, admitted that this aspect of welding presented a serious problem. He also stated that this emphasized the importance of selection of conscientious men for operators, men who, when they saw they had made a poor weld, would not hesitate to cut it out and start afresh.

At the suggestion of Robert Sibley, the meeting sent a telegram of greeting to C. A. Adams, of Columbia University, recently elected chairman of the newly-formed American Welding Society.

While considering the subject of welding a summary of conclusions presented at a recent meeting of the American Institute of Mining Engineers by H. M. Hobart, chairman of the Welding Research Sub-Committee for the Emergency Fleet Corporation, is of interest. Some of these conclusions, in addition to those already noted as given by Mr. Anderson, are as follows:

Bad places in the electrode wire, which sputter or flow unevenly when used, may be salvaged by dipping the

Generated on 2024-09-30 01:50 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

wire in milk of lime. Analysis of five different kinds of electrode wire and of the metals in the welds deposited when these electrodes were used showed that most of the carbon and manganese is burned out in traversing the arc, and that there is little if any change in the phosphorus, sulphur, and silicon. While it is hard to obtain a ductile weld, many tests have shown good results in this particular. Electric welds appear to be just as ductile as gas welds. In computing speed of welding, pounds of metal deposited per hour is the best criterion, much better than feet per hour, which varies with the type of joint, thickness of weld, and other conditions. A rate of one to two pounds per hour can usually be obtained when conditions are favorable. In determining the size of electrode, a current of 10,000 to 12,000 amperes per square inch is suitable for electrodes of $\frac{1}{8}$ to 5/32 in. diam. and 10,000 amperes per square inch for electrodes of $\frac{3}{16}$ and $\frac{1}{4}$ in. diam. Apparatus is being developed for feeding the electrode automatically, which permits higher speeds than are attainable with hand-feeding. More than one layer of metal is generally used for thick welds. The present practice calls for at least two layers for $\frac{1}{2}$-in. plates and three layers for $\frac{3}{4}$-in. plates.

In the rigid process of welding a long seam, a series of tack-welds is made along the seam or else a number of bolts or clamps are used to hold the plates in position while welding. This frequently causes internal stresses. In the non-rigid method, the plates are placed at a small angle to each other. As the welding progresses, this angle is gradually closed. Joints made in this way are free from internal stresses.

While great progress has been made in electric welding, Mr. Hobart recommends that engineers proceed with great caution in using it on work where the consequences of failure involve serious menace to life and property, such as pressure vessels, and especially high-pressure containers, at least until further research work has been done.

Production of Manganese Bronze From Low-Grade Material

In a paper presented recently before the American Institute of Mining Engineers by P. E. McKinney, attention is called to the fact that the common belief in the necessity of using high-grade materials for making manganese bronze is incorrect. Manganese bronze is used in marine construction, mining machinery, and other work where resistance to corrosion combined with a tensile strength as high as mild steel is required. A typical analysis is as follows:

	%
Copper	57 to 59
Zinc	38 to 40
Iron, manganese, aluminum, and tin	0.25 to 1.00
Lead	0.10 to 0.50

Many specifications place too low a limit on the lead content. No injurious effects have been observed when the lead was as high as 0.75%.

A crucible furnace cannot be used for making manganese bronze from low-grade materials, a reverberatory furnace being required for this work. A typical charge is as follows:

	Pounds
Yellow-brass machine-shop turnings	1250
Zinc dross from galvanizing plant	400
Aluminum turnings	30
Recovered scrap zinc	400
Dross and skimmings from the billet and slab plant	2000
Foundry-floor scrap and skimmings	650
Hardener made by melting scrap copper and manganese in equal proportions	250
Charcoal	75
Common salt	80
Total	5135

The salt is used as a flux. In charging, the hardener is placed at the bottom of the furnace and then the cartridge-case dross and zinc-dross together with a layer of charcoal, after which the foundry skimmings and the turnings are added. The charge is melted with occasional rabblings to clear the metal and to bring all the ingredients into intimate contact. When the bath is melted, the aluminum scrap is added and the necessary zinc additions are made, after which the charge is allowed to cool slightly in the furnace. It is then poured in ingots for re-melting after analysis has been made to determine whether the composition is to be corrected by mixing several heats or by adding zinc. Manganese bronze made in this way compares favorably with that made from expensive materials.

Production of Ferro-Manganese in Blast-Furnaces

The Bureau of Mines has recently published a report containing the results of an investigation by P. H. Royster of 18 blast-furnaces making ferro-manganese. In general, the ferro-manganese furnace operates with a colder hearth and produces colder metal and slag than a pig-iron furnace. Although more than three times as much carbon is burned at the tuyeres as in the iron-furnace, the gas from the combustion zone probably has a lower temperature. The two losses of manganese in the furnace are in the slag and in the waste gases. The proportion of manganese in the slag can be decreased by raising the blast temperature, by increasing the basicity of the slag, and by charging. It is increased by fast driving and by carrying a greater slag volume. The investigations were inconclusive regarding the possibility of decreasing the loss in the waste gases. In general, profits may be increased by using the better grades of coke and stone, by using less fuel, by running with a more basic slag, and by driving faster. There is greater room for improvement in the selection of coke and stone than there is in furnace practice.

THE New York police department is said to be arranging to employ several prominent 'aces' to act as patrolmen of the air. We presume they will call them 'fly cops'.

Generated on 2024-09-30 01:51 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Employment Managers Discuss Problems of Labor and Unemployment

THE regular monthly meeting of the Service and Employment Managers Association of California was held at the Palace hotel, San Francisco, February 15. About 40 members of the Association and guests were present. Myron C. Burr, employment manager for the Shell Oil Co. at Martinez, and chairman of the Association's program committee acted as toastmaster.

Warren H. McBryde, superintendent for the Hercules Powder Co. and president of the Association, gave a brief outline of the recent history of employment management from the time, soon after America entered the War, when Government officials discovered that production of munitions and other war necessities was being delayed in many plants working on war orders by unsatisfactory labor conditions and high labor turnover. They found further that these unsatisfactory conditions were at a minimum in plants that already had a modern employment bureau, and that transition from a peace to a war status was made relatively easily in such plants. The result of this discovery was the giving, under the auspices of the War Industries Board, of six-weeks courses in Employment Management at several universities in various parts of the country. On the completion of the course at the University of California, in October 1918, the graduating class formed the Service and Employment Managers Association of California. The signing of the armistice has made great changes in the industrial situation, but employment management is as much needed during the transition from war to peace conditions, and afterward, as it was during war times.

Employment management is as much needed during the transition from war to peace conditions, and afterward, as it was during war times.

The next speaker was S. Blum, associate professor of economics at the University of California, who discussed 'The National Problem of Construction'. He called attention to the fact that the industrial unrest existing in the United States and elsewhere at the present time was unlike anything that this country, at least, had experienced before. Most of the recent strikes are in trades where the wages are high and hours short. They are called in defiance of the authority of the national union leaders and, while wages and hours are the ostensible cause of dispute, the real object of the promoters of recent strikes is unquestionably to gain control of industry, thus changing the entire status of employment and striking at the vitals of the present economic system. The general strike at Seattle is the most extreme example of this movement so far in America.

The real object of the promoters of recent strikes is unquestionably to gain control of industry, striking at the vitals of the present economic system.

Throughout Europe, the movement for the control of industry by the wage-earners has gone much further than in America, and it is possible that a complete revolution of the economic system cannot be prevented. In England, for example, such important companies as the Rolls-Royce Motors Co. and the Cadbury Cocoa Co. are allowing committees representing their employees to have a part in the control of the works. Other concerns have had to go even further. An organization of Manchester cotton-manufacturers allows the workers a voice in determining the marketing policy. Even this is not satisfactory to the relatively strong Guild-Socialist faction, which demands complete control of industry by the wage-earners. It is significant that at the recent election, in spite of the importance of the issues, only about half of the registered voters cast their ballots, and a study of the distribution of the vote shows that the workmen in the industrial centres in particular refrained from voting, preferring to gain their ends by industrial action and then force Parliament to accept the results.

The movement for the control of industry by the wage-earners has gone much further in Europe than in America.

Such conditions, while they may be unavoidable in Europe, can be prevented in America if the right steps are taken in time. First, the employer will have to co-operate with the unions rather than attempt to fight them. Second, something more than mere adherence to the terms of a collective-bargain agreement is needed. That something should not be so-called 'welfare work', but rather the establishment of a reasonable human relationship between employers and employees. In particular, methods should be studied whereby the vicissitudes of unemployment should bear as lightly as possible on the employee. Third, relative leniency in the suppression of radicalism is advisable. It is better to have radical doctrines proclaimed from the soap-box than whispered in the backroom. Suppression frequently makes martyrs out of men, that, if let alone, would speedily lose their following.

Radicalism can be checked in America if the right steps are taken in time.

J. P. McLaughlin, State Labor Commissioner for California, spoke on 'Employment Problems now Confronting the Pacific Coast'. While admitting that there was a large surplus of labor at the present time, he stated that

Generated on 2024-09-30 01:46 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

it was no worse than frequently happens in normal times. In a short time, farm work and other seasonal activities will call for all the available labor. There is, however, a possibility of bad unemployment conditions next winter. Preparation should be made so that public works may be started whenever unemployment becomes serious.

America is safer than any other country from industrial unrest because labor is, at the bottom, conservative. Not only was the general strike in Seattle in violation of union agreements and of the instructions of national labor officials, but it was called by the Central Labor Council without taking a vote in the unions. It was a direct attempt to substitute the red flag for the American flag, and as such, failed miserably. The principal cause of labor unrest is the high cost of living, and reduction of wages should therefore be avoided. With regard to the situation in the local shipyards, a great deal of the trouble is chargeable to the procrastinating policy of the Government in settling small grievances. As a basis for future industrial peace in general industry, some form of profit sharing combined with a minimum living wage will probably be advisable. In America, at least, it is not likely that the wage-earners in general will demand control of industry.

The Seattle strike was a direct attempt to substitute the red flag for the American flag, and as such, it failed.

C. L. Foster, employment manager for the Union Construction Co., discussed the labor situation in the local shipyards at the date of the meeting, calling particular attention to the fact that the present strikes were in defiance both of the Iron Trades Council and of the regulations of the local unions governing the method of taking a strike vote. Another serious condition, which interferes not only with the feasibility of a wage increase but even with the maintenance of the present scale, is the deliberate limitation of production by the Oakland Boilermakers' Union to about 40% of a real day's work.

J. J. Borree, adjutant-general for the State of California, discussed the employment problem, with particular reference to the returned soldier. Employers almost without exception are giving his old job back to the soldier and have announced they would continue to do so. However, this does not provide for the cases where the firm employing a soldier has gone out of business since he enlisted. There are about 137,000 stars in the State service-flag, to which should be added 40,000 to 45,000 men from other States who will settle here. Including the many Australian and New Zealand soldiers that are likely to decide to stay in California, there will be about 200,000 men for whom employment must be found. The State authorities have nearly completed plans for handling the re-employment of discharged soldiers. Each community will be held responsible for its own soldiers and will have a quota similar to the draft quota. A committee will be organized in each community. The order of preference will be: first, soldiers from California; second, soldiers from other States; and third, persons who took the soldiers' places during the War.

Employers almost without exception are giving his old job back to the soldier.

While the unemployment situation in California is not likely to become serious, liberal appropriations for public works, particularly highways, are advisable in order to provide employment until readjustment is completed. It is cheaper to keep the soldiers employed on work that is beneficial to the community rather than to support them in non-productive work in the Army.

In discussing 'Demobilization of War Industries', Mr. McBryde spoke of the special difficulties met by the Hercules Powder Co., which employed 400 men in 1914, 3000 men at the time the armistice was signed, and now, on account of lack of even the normal peace-time demand, was finding difficulty in giving employment to the normal force of 400 men. To add to the company's troubles, it had 410 men in the Service, who were all promised their old jobs back. While the powder industry is an exception, most industries have been obliged to reduce forces since the armistice, and very few have been able to increase their number of employees. Therefore, considerable unemployment now exists, and this is likely to increase. Construction of public works is advisable.

G. H. Van Senden, superintendent for the Shell Oil Co. at Martinez, was to have spoken on 'Labor Conditions in the Oil Industry', but was unable to be present. On behalf of the industry, Mr. Burr reported that, in general, forces had been kept up to pre-armistice size, but that as soon as any large number of soldiers returned, it would probably be necessary to lay off many of the men that held the soldiers' places during the War.

Announcement was made that a course in employment management, the last to be given under Government auspices, will shortly commence at Reed College, Portland, Oregon.

Consumption of Powdered Coal in Metallurgical Work

The following table is taken from an article on powdered coal in 'The Iron Age' by Charles E. Longenecker:

	Pounds of coal per ton of metal
Puddling	1000
Busheling	400 to 500
Billet	160 to 180
Forging	400
Annealing sheets	200
Tin	170
Open hearth	500 to 600
Copper reverberatory	300
Tin smelting	1400
Galvanized pots	100
Tire	330
Wheel	600
Continuous bloom	100 to 150
Rivet-making	90

During the War 270 bombs were dropped on various parts of Paris killing 266 people and wounding 603.

Generated on 2024-09-30 01:46 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Current American Shipbuilding

During the seven months ended January 31, 1919, the merchant ships built in American yards and officially numbered by the Bureau of Navigation, Department of Commerce, aggregated 1149 of 1,996,859 gross tons. In addition, 48 wooden vessels of 100,288 gross tons were built for foreign flags, mainly French. The following table shows details of ships built for American register:

	Atlantic and Gulf		Pacific		Great Lakes		Western rivers		Total	
	Number	Gross	Number	Gross	Number	Gross	Number	Gross	Number	Gross
Wood										
Sailing	40	30,843	8	7,949	...	.....	..	...	48	38,792
Steam	107	213,817	126	333,651	7	500	8	716	248	548,684
Gas	151	15,413	131	13,107	24	313	32	612	338	29,445
Unrigged	126	47,691	28	5,991	8	704	4	37	166	54,423
Total	424	307,764	293	360,698	39	1,517	44	1,365	800	671,344
Metal										
Sailing	2	738	...	.....	...	.....	..	...	2	738
Steam	102	458,453	102	576,219	127	286,851	2	335	333	1,321,858
Gas	3	687	...	.....	...	.....	4	48	7	735
Unrigged	...	.....	2	673	5	1,511	..	...	7	2,184
Total	107	459,878	104	576,892	132	288,362	6	383	349	1,325,515
Total										
Sailing	42	31,581	8	7,949	...	.....	..	...	50	39,530
Steam	209	672,270	228	909,870	134	287,351	10	1,051	581	1,870,542
Gas	154	16,100	131	13,107	24	313	36	660	345	30,180
Unrigged	126	47,691	30	6,664	13	2,215	4	37	173	56,607
Grand total	531	767,642	397	937,590	171	289,879	50	1,748	1,149	1,996,859
Vessels Built During the Seven Months Ended January 31, 1918										
Wood										
Sailing	66	34,107	9	9,907	1	19	..	...	76	44,033
Steam	22	5,148	11	11,412	6	139	5	253	44	16,952
Gas	126	8,912	122	30,658	22	357	41	649	311	40,576
Unrigged	201	65,203	68	9,549	14	1,970	14	691	297	77,413
Total	415	113,370	210	61,526	43	2,485	60	1,593	728	178,974
Metal										
Sailing	2	3,058	...	.....	...	.....	..	...	2	3,058
Steam	33	172,560	17	103,612	36	92,931	1	1,178	87	370,281
Gas	3	475	10	3,526	1	2,124	3	23	17	6,148
Unrigged	2	872	2	1,814	6	1,019	2	1,399	12	5,104
Total	40	176,965	29	108,952	43	96,074	6	2,600	118	384,591
Total										
Sailing	68	37,165	9	9,907	1	19	..	...	78	47,091
Steam	55	177,708	28	115,024	42	93,070	6	1,431	131	387,233
Gas	129	9,387	132	34,184	23	2,481	44	672	328	46,724
Unrigged	203	66,075	70	11,363	20	2,989	16	2,090	309	82,517
Grand total	455	290,335	239	170,478	86	98,559	66	4,193	846	563,565

In addition to the above there were built for foreign owners during the seven months ended January 31, 1918, 6 wooden vessels of 4668 gross tons, and 13 steel vessels of 39,042 gross tons.

During the 12 months ended January 31, 1919, the total shipping built and officially numbered, including those for foreign owners, aggregated 1957 of 2,920,832 gross tons. Of this number, 490 of 1,982,372 gross tons were seagoing steel steamers, 392 of 810,194 gross tons were seagoing wooden steamers, and the remainder were non-seagoing vessels for domestic trade.

During January the output dropped to 132 vessels of 264,346 gross tons, of which 42 of 174,799 gross tons were seagoing steel steamers.

An ounce of get-up-and-get is better than a pound of that "tired feeling."

It's seldom safe to judge a man by his own opinion of himself.

Use of Army Gas-Masks

A statement recently issued by the Bureau of Mines discusses the industrial use and limitations of respirators, gas-masks, and oxygen-breathing apparatus. There is a popular belief that the army gas-mask is effective against gases, wherever and whatever they are. However, there is a wide difference between outdoor and indoor conditions. A mask that would furnish complete protection on the battlefield might fall down utterly in a closed room where the concentration of gas was much greater. Furthermore, the army mask was designed as a protection against particular gases and is ineffective against the commoner industrial gases, such as illuminating, natural, producer, and blast-furnace gas. For dust and liquid mists, the simple 'pig-snout' respirator containing a moist sponge is the most effective protection, but it is troublesome and is unpopular with workmen.

As far as industrial uses are concerned, the army mask can be employed to advantage only in certain chemical industries, around smelters and roasters where there are sulphur fumes, and in industries using chlorine and bleaching-powder. It is no protection against carbon monoxide, or places where the oxygen is low. The Bureau is now working on a carbon monoxide mask, but has not as yet been successful in perfecting one. Wherever the oxygen in the atmosphere is low, the self-contained oxygen-breathing apparatus should be used.

The Bureau of Mines is now making, at its Pittsburgh experiment station, an investigation of respirators, gas-masks, and breathing appliances.

Generated on 2024-09-30 01:55 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

The Wastes of the West—V

By Miner Chipman

WORK, WAGES, AND BOSSES

In the Land of Utopia, the land where all men are born free and equal, equal in brains, equal in strength, and equal in ideals, there will you find inefficiency in its most cultivated development. The socialistic commonwealth is supposed to be founded upon certain fundamental principles of human justice. But what a structure has been reared upon this foundation! In seeking a remedy for specific social evils, an endeavor has been made to make heaven on earth, and as a result, we have stagnation, damnation, and hell. The Spanish influenza was bad enough, but the Russian influenza is far more deadly in its reaction. In seeking reform of political and industrial systems, the radical leader strikes at every precedent, and would destroy the foundations upon which human happiness has been building for a thousand centuries.

Spanish influenza was bad enough, but Russian influenza is far more deadly.

There is no word in the English language so frequently misunderstood as efficiency. Efficiency is confused with system, with methods, with devices. It is conceived to be a thing, like a card-index, or a filing-cabinet. Many business men have a notion that efficiency is a something that can be purchased by requisition. It is considered to be a kind of patent medicine, put up in pellets, and sold by the dozen at the corner drug-store. This lack of understanding is not confined to employers. The radical revolutionist scorns the word, and says: "We want none of it."

Efficiency is a word signifying measurement. An efficiency system is an instrument of measurement. It is a scientific method of measuring human and mechanical achievement. A tape-line is an instrument for measuring distance, a watch an instrument for measuring time, a thermometer an instrument for measuring temperature. Because we may not be inclined to walk from San Francisco to Los Angeles is no reason why we should condemn the surveyor and his measuring lines. Because we are annoyed at the delay of a train is no reason why we should smash the watch in our pocket. The weather may be excessively hot, but destroying the thermometer will not change the temperature. A man may or may not believe in doing a day's work for a day's pay, and may scoff at the word 'efficiency', but the measuring line is there just the same. Efficiency is not a something to be accepted or rejected at will. It is universal, it is always with you, it is the real measurement of the man you really are.

An efficiency system is a system of measurement.

Efficiency is the comparison between the man you are and the man you ought to be; a comparison between the work you do and the work you ought to do; a comparison between the way you do a job, and the way you ought to do it. Socialism will not do away with efficiency. Social reform of any kind will meet its final test in efficiency. That system of social and industrial organization will survive which, in the long run, proves most efficient in the production of human happiness.

Efficiency is the comparison between the man you are and the man you ought to be.

The manufacturer who says "I am not interested in efficiency" demonstrates that he does not know nor understand the meaning of the term. He might just as well say: "I am not interested in a steam-gauge, a volt-meter, or a speedometer." I do not question the fact that he may not be interested in efficiency, but I seriously question whether or not he means just what he says. He really means that he lacks faith in the particular scheme of securing maximum production.

The manufacturer who says "I am not interested in efficiency" might just as well say "I am not interested in a steam-gauge."

Every employer is his own efficiency engineer. The results secured, the profits at the end of the year, are the result of his own theories concerning efficiency. The actual efficiency attained may not be the efficiency-measurement desired, but it is exactly what resulted from the principles applied.

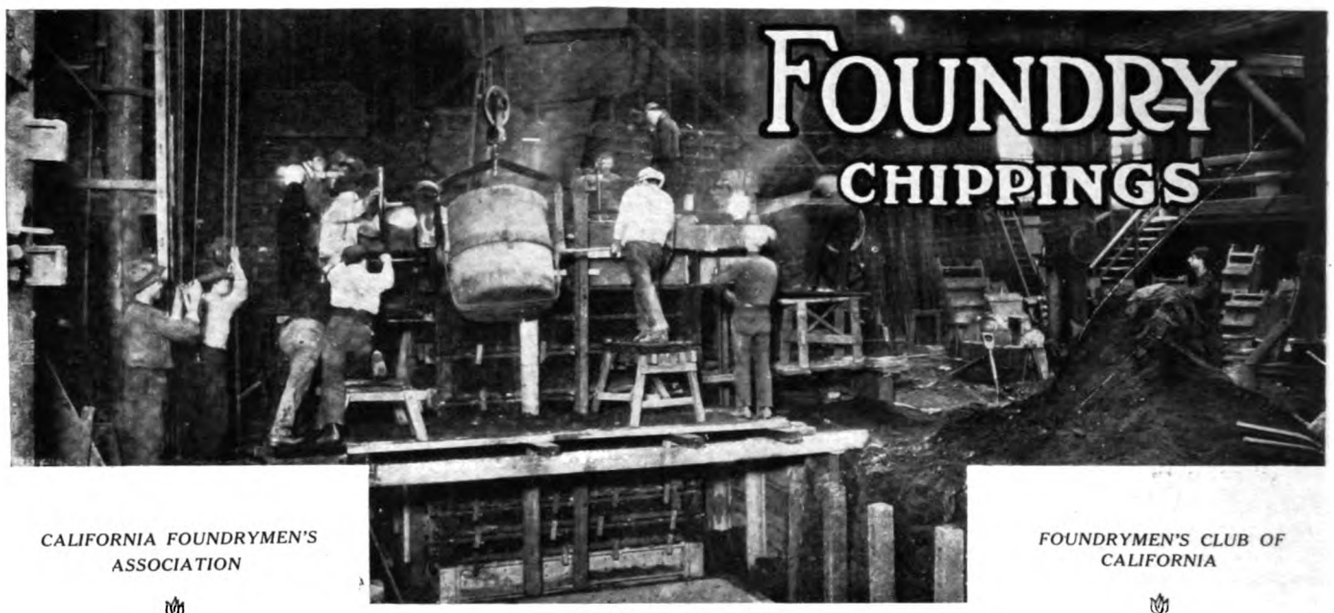
To attain maximum efficiency requires certain definite knowledge. To be a manager of production you must have control of the factors of operation. Jobs must be defined, and the right men fitted for each job. There is no need of talking about efficiency without an adequate and properly geared-in organization. Too many employers hope to secure efficiency by system without giving proper consideration to the problems of fitness and organization. It cannot be done.

There is no use in talking about efficiency without an adequate organization.

Men, not machines, really count. Production and efficiency in the end must be measured in the terms of human relations. The real efficiency engineer is a human engineer. He must be able to inspire the confidence of men, and secure the fullest co-operation.

THE Bolshevik restriction on baths is just what we expected would come, but the class distinction between those who can bathe twice a month and those with smaller privileges is a surprise.

Generated on 2024-09-30 01:47 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN



CALIFORNIA FOUNDRYMEN'S ASSOCIATION

FOUNDRYMEN'S CLUB OF CALIFORNIA

D. GUILD, Jr., Editor
Phoenix Iron Works, Oakland

Foundry Practice in Australia as Seen by a Native

By ROBERT ALBURY*

IN the February issue of 'Metal Trades' there appeared an article on 'Foundry Practice in Australia', written by an American that went to Australia and viewed the situation as a transient. It is not my desire to criticize any of the statements made by Mr. Henderson, but rather to supplement his article by giving a view of the conditions as known and experienced by a native of Sydney.

Conditions in the foundries of Sydney are entirely different from conditions in San Francisco, as in the majority of shops there a person on entering the foundry in the morning sees the floor just as it was left the evening before. Each morning, when the molders come into the shop, they shake out the previous day's work, cut and prepare the sand, carefully leveling it over the foundry-floor, giving the floor the appearance of a well-kept bowling-green, and then complete the work by carrying out the excess boxes and flasks. When the molder gets his assignment, about nine o'clock, he gets his own sand-heap ready by digging into the floor that he had so carefully leveled such a short time before.

With reference to crane equipment it might be of interest to state that in most of the jobbing-shops of Sydney all the cranes are of the 'armstrong' type worked by chains from the floor of the foundry. Chapman's foundry at the foot of Druitt street, Foster's of St. Peters (a suburb of Sydney) and Hodkinson & Lemon's Foundry at Newtown, which are three of the representative jobbing-shops of Sydney, are all equipped with cranes of this type.

There are, however, a few shops in and around Sydney that are a little more modern and up to date. Hudson Bros. of Clyde, Morts Dock, and the Government Shops at Eveleigh, are all equipped with fairly modern appliances. But even these shops do not boast of having any night-men, or, at least, they did not up to the time of my departure from Sydney about six years ago.

As for the class of work that is turned out, the castings produced are as fine (even though produced by such ancient methods) as any I have seen in this country. I refer especially to the Ocean Street 1000-hp. cable-car engines, which were built by Hudson Bros., Clyde, and which are as perfect as any castings ever turned out in San Francisco, as well as various other jobs that came to my particular notice.

In the previous article, the writer mentions match-plates made of ½-in. cast-iron as being used in one of the shops. His description is correct, for I have many times used the same sort of heavy unwieldy plates while making castings for the Beale Sewing Machine Co. of Sydney.

Speaking of the sands and mixtures used, it may amaze you to know that even as recently as six years ago they did not even know about oil-sand and were inclined to scoff when I suggested its use in one shop. I have worked in one of the aforementioned shops, where it took a molder a day to make a plain 3-in. gas-engine cylinder, which could be made here in about 1½ hours, and it may

*Foreman Steiger & Kerr Stove & Foundry Company.

Generated on 2024-09-30 01:48 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

be of interest if I explain some of the difficulties encountered.

The water-jacket core of the casting was made by the assistant foreman of the shop, who took one full day to the job. The molder wet-blacked and stove-dried the mold before closing. This job was cast on end at the close of the second day's work. The first casting was lost. The remaining three that were eventually made did not have sufficient circulation, owing to the failure to remove all the wires and core sand from the castings. The composition of the water-jacket core that caused the difficulty was as follows, and this may explain the reason for the failure: Burnt black sand from the floor, sharp sand, treacle (which we know as molasses), horse-manure, flour, and sawdust.

There is only one up-to-date dock, namely, the Cockatoo Dock, which is on an island in Sydney harbor, where some war vessels were built. But the building process was merely assembling, for the parts were all made in England.

In closing, I would state that I am a native of Sydney, born there in 1861. I served my time of six years and four months as an indentured apprentice in Chapman's foundry. I worked in South Australia five years, and in West Australia five years, and then came to San Francisco twelve years ago. About six years ago there came a longing for the old country, so I and four sons, two of whom are molders in San Francisco, returned to Australia, intending to remain there. But the six years spent in San Francisco proved too strong an influence, and, after six months, I returned to San Francisco, glad to get back where shop conditions, social conditions, and in fact all conditions were more conducive to a happy and prosperous life.

Psychology in Electric Welding

An engineer who has a number of electric welders working for him reports that they are very sensitive to outside influences. They imagine that all sorts of things affect the welding quality of the arc. If a welder is working with a set that has not exactly the same appearance as the one to which he is accustomed, he is apt to take half a day to regulate it, fully believing that the difference in the looks of the machine makes a difference in the arc. Frequently welders have complained that they could not get results because the grids were not the usual shape. At one plant it finally became necessary to put all the grids in the same sized boxes and paint them the same color. After this, the welders would change from one set to another without noticing the difference that had troubled them before. Whether this method of camouflage would enable a man used to direct-current welding to work with alternating current, or vice versa, is a little uncertain, but it opens an interesting field for investigation.

The Brass Foundry at the Union Plant of the Bethlehem Corporation

By T. A. O'ROURKE

Industrial growth on the Pacific Coast during the past five years, particularly in the building of ships, cannot be better exemplified than in that particular and most necessary plant, the brass foundry. It is my purpose in the following article to set forth some instances of the rapid growth and development that have come under my observation while serving as foreman of the brass-shop at the Union Plant of the Bethlehem Shipbuilding Corporation.

In 1914, at the beginning of the War, the shop covered a floor-space of but 40 by 60 ft. and contained only 11 crucible-furnaces.

At this time, the average output of castings, that is to say, of castings turned over to the machine-shop, was about 25 tons per month. The total output now reaches the tremendous average of 175 tons per month, or about 2100 tons per year.

The present shop has a floor 60 by 200 ft., and is equipped with one 20-ton traveling-crane and three 2-ton jib-cranes, together with 16 crucible-furnaces, 2 Schwartz furnaces, and 1 reverberatory furnace.

A job typical of much of the shop's work, and one which due to its complexity requires a great deal of skill and care, is that of making the two and three wing solid propeller-wheels. These wheels are 14 ft. diam. and require the melting of 21,000 lb. of manganese-bronze. Of this, 12,000 lb. is melted in a reverberatory furnace, 7000 lb. in a Schwartz, and 2000 lb. in crucible furnaces. Although the amount of metal in each furnace is different and the temperature in each varies, the metal in all the furnaces is ready to cast at the same time.

The rapid advancement and progress experienced by the metal tradesmen during the last few years is only one indication of what may be expected in the future, but only by united and sincere co-operation between the worker and the employer can such a result be obtained.

Lists of Business Men in Australia and New Zealand

The Bureau of Foreign and Domestic Commerce has compiled and has on hand at its branch offices the following lists, which may be obtained by referring to the file numbers:

	File No.
Engineers and contractors in Sydney, Australia	9493
General importers in New Zealand	9476
Wholesale hardware houses in Dunedin, New Zealand	9489
Dealers in machinery in Dunedin, New Zealand	9488
Iron and brass foundries in New Zealand	9487
Importers of iron and steel products in Christchurch, New Zealand	9486
Shipbuilders and marine engineers in Dunedin, New Zealand	9477

Generated on 2024-09-30 01:51 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Core Mixtures for Gas-Engine Cylinders

By JOSEPH SILVERFOOTE, H. C. Macaulay Foundry Co., Berkeley

In practically every foundry in the San Francisco Bay district they are using two kinds of sand in the core-rooms. One is the Monterey White Sand, the other is called Gallagher Sharp Sand. A great many of the foundries make the error of mixing by guesswork, instead of using a standard measure, which always insures the best results. Some will first try a new binder, then again they will give the sand a bath in oil, flour, or compounds, doing so by guesswork. Almost all cheap 'oil binders' will burn and evaporate during the drying of cores, and they do not hold the sand together. Foundries that are using 'oil-sand' cores find no difficulty in getting the cores to leave the castings. It is when using flour and substitutes for flour that trouble arises.

To ensure an easy process of removing castings, also in making cores, I use three kinds of 'oil-sand', and by so doing obtain the best results.

Mixture No. 1, which is called 'Gallagher Sharp Sand', is composed of the following:

8 cu. ft. of Gallagher Sharp Sand
12 pints of linseed oil

Mix a little wet, ratio 1 to 40. The mixture is suitable for all 'oil-sand' cores and must be vented well. Monterey White Sand is much cleaner and does not require as much oil.

Mixture No. 2

8 cu. ft. of sharp sand
8 pints of linseed oil

Ratio, 1 to 60. This should be mixed well and a little wet, which will insure a hard core, and requires little venting.

Mixture No. 3

6 cu. ft. of floor sweepings
3 cu. ft. of Monterey Sharp Sand
9 pints of oil

The oil used in this mixture is composed of two grades, paint-oil and linseed oil. Use 6 pints of paint-oil and 3 pints of linseed oil mixed together. Mix well and a little wet. This mixture is suitable for any kind of small or large cores, and will not scab or cut.

Another good combination, which most foundries are using, is called 'Goulac Mixture' and is composed as follows:

8 cu. ft. of Gallagher Sharp Sand, or floor sweepings may be substituted
4 pints of linseed oil, or
8 pints of dry 'Goulac'

This mixture makes a fine core, dries quickly, may be used for any kind of large cores, and is adapted for gas-engine bases, frames and pistons, and all kinds of heavy cores. Be careful not to use any binder in the core-wash as it is likely to cut. Use nothing but water.

Black compound mixture No. 5:

Many foundries are using gangway sand, also new sand in this mixture. I have always obtained the best results and encountered no difficulties in having the cores leave the castings readily with this mixture, by mixing as follows:

8 cu. ft. of Gallagher Sharp Sand, or the same quantity of core-floor sweepings
1½ gal. of black compound
4 cu. ft. of sawdust

Ratio, 1 to 40.

When using old burnt sand the compound should not be mixed stronger than ratio 1 to 60, and the sawdust should not be omitted.

Mixture No. 6

3 cu. ft. of black molding-sand
1 cu. ft. of Monterey Sharp Sand
1 cu. ft. of new sand
3 cu. ft. of sawdust
1 gal. of 'Goulac' water

Add plain water and use wet. In mixing 'Goulac' water, use a quart of dry 'Goulac' to a gallon of water. This is a mixture that will not scab or cut, and is particularly good for main cores of cylinders. Do not close the molds if they are warm and cores are cold. The cores should be warmed before closing molds.

Flour and Sand Mixture No. 7
(when using new sand)

5 cu. ft. of sharp sand
3 cu. ft. of new sand
4 gal. of flour, or 1 to 12

To obtain the best results with this mixture it should be well-mixed by machine. By so doing you will save both time and labor. By the old method it would require about an hour and a half to get the mixture ready for the core-maker, whereas, by using a machine it will require only about ten minutes.

'Kordek' Mixture No. 8

8 cu. ft. of sharp sand
8 pints of 'Kordek'
2 cu. ft. of new sand
1 cu. ft. of sawdust
½ gal. of paint-oil

This mixture will make a good strong core. It will not cut or blow and will leave the castings readily.

"PAPA," asked James, "wouldn't you be glad if I saved a dollar for you?"

"Certainly, my son," said Papa, so delighted at this evidence of budding business ability that he handed the youth a dime.

"Well, I saved it all right," said James, disappearing. "You said if I brought a good report from my teacher you would give me a dollar; but I didn't."

Generated on 2024-09-30 01:48 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Book of a Thousand Excuses for All Persons Connected With the Foundry Trade

CHAPTER XII

Machine Shop Owner's Excuse for Constructing a Machine Shop

"Why did I start a machine shop?"

"Well I'll tell you. My grandfather left me a perfectly good drill-press, three long drills and two short ones, and a bench-vise. Being naturally mechanically inclined I decided to grasp the opportunity and get into the machine game. I had a large sign painted reading MACHINE SHOP and fastened it over the basement-door.

"My natural mechanical ability made me feel certain of success and my willingness to work 18 hours per day put the clincher on.

"The only part of the business that it was necessary for me to learn was how to charge for my work.

"I called on the plumber in the next block and he explained to me just how he worked it. That one lesson was sufficient as I have never had any difficulty along the same lines since.

"At the present time I am employing fifty-four apprentices and one machinist in my shop. Of course I have more machine-tools than when I started in the game but most of the boys are kept busy on outside work and we don't require many tools."

The above reply and explanation was given in answer to my query as to why this man had gone into the machine business.

Two partners conducting a machine-shop out on Bryant street explained that "they just loved the machine business" and loved the idea of being their own boss, at least during the daytime. (Of course when they get to their respective homes at night the wife does the bossing).

"We each put $1600 into this place three years ago and could have doubled our money if we had sold out six months ago when the War was still on, and we could have collected all of our accounts. However, that is past history.

"We don't make quite as much money as when we worked at the Union Iron Works but then, what's the difference. We have the satisfaction of running our own business. Some of these guys that work for us want the earth, but then, we should worry, it's not ours."

Another owner went into the business because he had heard from a machinist relative what a snap the machine game was. The other fellow furnishes all the material, and it is only necessary for you to drill a few holes, put in the bolts, and collect your profits. In fact the business is virtually all profit, and how any man can afford to stay out of it is a great mystery.

It is a well established fact that a machine shop employing three men and four apprentices can easily support two proprietors, one foreman, three salesmen, two stenographers, two clerks, one bookkeeper, one timekeeper, eleven helpers, and three automobiles, and at the same time keep the owner worrying as to how he can dodge a heavy excess-profits tax.

Machine-shops vary greatly in size. The smallest will possibly be equipped with a screw-driver and a file while the largest will have countless machine tools of the very latest design. The margin of profit however seems to be just about the same in all cases.

There is one weakness in the machine-shop game which must not be overlooked. The machine-shop cannot exist without castings, and must depend on the foundryman to keep the hungry machines well fed with good castings.

How the machine-shop fellows manage to keep the poor fool foundryman grinding out castings for little or nothing is also a great mystery, as we cannot understand why the foundryman does not bolt up the job himself, and collect the profit.

In conclusion the writer wishes to congratulate the machine-shop owners on their wise choice of a business that has so many desirable features, and trusts they will give some of the rest of us a chance at the game after they have filled their coffers.

C.J.P.X.Y.Z.

Propose Electric Smelting of Iron Ore in British Columbia

The British Columbia Department of Mines has recently published Bulletin No. 2, 1919, containing a report on 'The Commercial Feasibility of the Electric Smelting of Iron Ores in British Columbia' by Alfred Stansfield, professor of metallurgy at McGill University. Mr. Stansfield concludes that, on account of the high freight rates from existing centres of production, there is a possibility of the commercial production of electric pig-iron, in spite of the high costs of the electric-furnace process. The commercial feasibility of such production depends largely on how much the price of imported pig-iron is likely to decrease from the present high levels. With prices at pre-war levels it would be impossible for the electric furnace to compete.

There is enough iron ore of a good grade to supply the local market for many years to come, charcoal made from waste wood can be used to supply the necessary carbon, and either existing hydro-electric developments or new projects can supply power. On account of the small local demand for pig-iron, if a plant was built, it should be equipped to make other products as well, such as steel castings, small rolled sections, and ferro-alloys. Investigation is also recommended of the process in which the ore is crushed to a powder, and subjected to other preliminary treatment before being charged into the furnace.

Generated on 2024-09-30 01:53 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Trade Notes

A YARN appeared in the paper several days ago about the shipment of a barrel of 'booze' to one of our San Mateo foundry friends by mistake. He denied the shipment with his customary dry humor and says he seldom gets it by the barrel anyway.

WHERE'S the good old molder that used to look over his castings at noon hour.

Now that the lid is off on pig-iron, we may expect the usual crop of dealers with wonderful special brands they can't sell in the East.

How would it do to start a 'League of Peace' among the Industries?

THE most uninteresting thing in existence is a 'cancelled order'.

THE manager of one of our local shops was royally entertained a little while ago by one of his 'overtime kings'.

WE hear a lot about the 'Bullshevicks' but how about the 'cowshevicks' and the little capering 'calfshevicks'.

WHEN it comes down to a real skilful scientific mechanic give us the 'yellow-brass molder' who works in a 'tub'.

A FLASK is a liability that the foundryman spends a lot of time and money on, and then presents its cost to the customer.

ONE of our shops reports the employment of a 'bar fly' as a helper, who worked two hours and won four cents back wage. When he called to collect the first third payment he remarked that the iron heel of despotism was fast destroying the ambition of the real workman.

A FELLOW down on the flat found a machinist that knew what he was striking for, but the answer was wrong at that.

THE way to start the 'Wheels of Industry' again is to have less 'wheels' and more 'industry'.

A BLOWHOLE is a thing what's located where it 'hadn't oughter be'.

SOME miscreant at the Hockus Pockus Iron Works set the clock back an hour, and nobody got any overtime.

PRETTY soon we'll be getting calls from the bird with a patent soup-spoon which will be made by the million; but he'll give an order of six to start with if the price is right.

A NEW molding machine is being designed which jars, rolls over, draws, pours, and deposits casting on scrap-pile for re-melting without any extra expense.

LET us hope that the proposed new agreement won't contain a clause requiring us to provide 'afternoon tea'.

HAVE you noticed how many perfectly clean machine-shop foremen you see nowadays.

Now that pig has gone down three dollars and labor has gone up ten dollars a ton, the man who reduces his price from eight to six cents won't be bothered with an income tax next year.

AN observing office-boy working in a shipyard has described a boiler-maker as 'a guy what gits paid fer makin' trouble'.

THE French custom of personal salute would never be popular in a foundry unless they discover white plumbago.

THERE was a guy in town from Oakland the other day that says he has a helper working for him as a wheelbarrow chauffeur who understands English and don't eat garlic. The association has appointed a committee to investigate this 'canard'.

WHY don't somebody get up a scheme to make the bum castings retroactive on the fellow that made them?

THE last four years have taught us that, when professors and economists attempt to regulate the labor question, it is about time for the employers to take to the woods.

WOULDN'T it be a glorious feeling if the employers would strike and go on a fishing trip until some one settled it for them?

THERE are a few trades that were overlooked in the schedule of the Macy Award:

'The Wabbler': A fellow that holds a three-eighths rod at the lips of the two-ton ladle to hold the slag back.

'The Almoster': The guy who closes and pours his mold when he knew there was a drop.

'The Soaper': The bird who's all washed up before he punches the clock.

'The Gummer': Meaning the fellow that steps all over the gaggers sticking out just before pouring.

Prevention of Columnar Crystallization of Ingots by Rotating the Mold

During solidification there is a tendency in the ingot toward crystallization at the dividing line between the solidified and the still fluid part of the ingot. This is particularly objectionable because it is usually accompanied by segregation of the carbon and phosphorus at that point. In a paper recently presented before the American Institute of Mining Engineers, Henry M. Howe and E. C. Groesbeck suggested rotating the ingot during solidification in order to prevent this crystallization. Experiments conducted by them in which the rate of rotation was varied continuously, and the direction varied occasionally, gave good results.

LAWYER: "You put your damaged affections at a high valuation, it seems."

Girl plaintiff (in breach-of-promise suit): "Why not. I have had a hundred hysterics and shed gallons of tears. Labor and materials are expensive now-a-days."

Generated on 2024-09-30 01:52 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

PATTERN FOR LARGE ENGINE BED-PLATE

The Patternmakers Part in the Shipbuilding Program

By THOMAS STOFFER*

When discussing fabrication of complicated and curious forms of patterns, it must be made clear that the patternmaker not only requires tools, but a knowledge of structure as well. It is only when this knowledge of shapes and designs is mastered that the patternmaker becomes proficient at his craft. Let us consider what knowledge is necessary as a part of the patternmaker's equipment if he is to construct the patterns for a triple-expansion reciprocating engine, for instance, either the low-pressure, the intermediate, or the high-pressure cylinder, whose bore ranges from 36 to 90 in. and whose stroke is about 48 inches.

Work of this kind cannot be accomplished by consulting books or charts. On the contrary, it takes years of experience and conscientious study to perfect the patternmaker and make him a skilled master of his craft. Before actual work is commenced on the pattern, he must have in his mind an image of the finished product, and this is his only guide until the job is completed. When actual work is commenced, the patternmaker must be able to construct the pattern so that the molder can draw it from the sand and must also build it so strong and durable that any number of molds can be made from it. He must know how each core sets in the mold, particularly the cores for the steam-ports, whose course is sometimes so irregular that a snake would find it difficult to follow all of the twists and curves.

The bed-plate for the main engine, such as is shown in the illustration, requires the largest pattern to be constructed for the job. Much care must be given to all of the details of this pattern so that it will hold its shape and withstand the hard usage that it will get on account of its size. The pattern in the illustration is about 21 ft. long and 12½ ft. wide. The casting weighs about 30 tons when finished. Extreme care must be exerted in building the bed-plate pattern, and the shrinkage must be carefully figured, because the front and back columns must match exactly on the pads built for them on both the cylinders and bed-plates.

The same precision must be used with the numerous other intricate parts of the engine such as the slide-valves and water-jacketed bearings and a number of other smaller patterns. These must be made exactly according to the drawing, so that when the engine is assembled each casting will fit and match in its proper place.

One other pattern of particular importance is the propeller. This pattern, while not a part of the engine, is so closely allied with it that a brief mention of it is not out of place. In order to build up the propeller-blade to its proper shape and pitch so that it can develop the

*Patternmaker, Bethlehem Shipbuilding Corporation.

Generated on 2024-09-30 01:49 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

required speed, a perfect and durable pattern must be constructed.

When a patternmaker is working from an old or broken casting (which by the way is called a cast-iron blue-print) his work must be extremely accurate because when the new casting is finished it must fit exactly in place of the old one. An instance of this is seen in the replacing of a stern-frame or any of the other hull castings, where the casting must fit the rivet-holes that have already been drilled in the plates.

This article has not been written for the man that is familiar with the craft, but for the uninformed whose knowledge of patterns is limited. The historian in his chronicles of the shipbuilding program during the War will tell how the shipbuilders assembled the hull of the ship in record-breaking time; how the riveters drove more rivets than any man thought possible; how the molders cast more iron, brass, and steel than could be realized; how the boilermakers, the machinists and other artisans, with the use of jigs and formers, completed their work in a highly creditable manner. Yet I fear that the patternmaker, because his handiwork does not exist in the completed ship (except as far as the perfection of the whole ship is concerned) will not be remembered by the historian.

Because of the fact that it takes a patternmaker about five years of training and study to become master of his craft and a few years more to perfect him in his work, there are few patternmakers as compared to the other crafts. Because they are so few and because their work does not show in the completed ship they are often forgotten. But the patternmaker has worked unceasingly in unison with the other crafts and has toiled conscientiously night and day with one object in view, that of doing his share toward building ships and toward winning the War. With that spirit he easily accomplished his object and at no time was there a day lost in the shipbuilding program on his account, which is a record that will compare favorably with any of the other trades.

New Export Conservation List

The War Trade Board has announced a new export conservation list, as of February 5, which is substantially as follows: Ammunition, dairy products, coal, coffee, coke, eggs and egg products, moving-picture films, fire-arms, gold and jewelry containing gold, pork products, quinine, cinchona bark, wheat (except seed-wheat), and red-clover seed.

PAT AND MIKE were watching some bricklayers at work one day, and Pat asked:

"Say Mike, what is it that holds the bricks together?"

"Sure," said Mike, "that's aisy. It's the mortar."

"Niver a bit of it," said Pat, "that keeps them apart."

Foundrymen's Club

Notice to Hobby Riders

If you have a hobby that you ride almost to death, move over, and let the rest of us ride, too. Don't hoard your good ideas. Bring them to the Club meeting and let us enjoy them with you. Send your ideas to the Policy Committee, and they will see that a place is found on the program.

Question Box

The success of every meeting depends upon your interest in it. If you have some question about foundry practice or if you have run up against some problem in your work, write it out and send it to the Policy Committee. They may not be able to answer it, but they will find someone who can.

Correction

The article on page 89 of the February number of 'Metal Trades' was credited to H. Wiemann. This article should have been credited to Henry Niemann of the Enterprise Foundry Company.

The Molander System of Cupola Lining

At the meeting of the Foundrymen's Club on February 20, D. Molander discussed the system of cupola lining developed by him. As already explained in the February issue of 'Metal Trades' this consists first, in leaving an air channel 1 by 4 in. extending around the circumference of the cupola directly above the tuyeres, and between the inner and outer layers of bricks; and, second, in placing the three tiers of bricks directly above the tuyeres and in the melting-zone without using fire-clay. The result of this is that the air circulation provided by the channel and by the small spaces between these loose bricks cools the bricks and prolongs the life of the lining. Mr. Molander stated that whereas, with the old style of lining he had been able to get only two 15-ton heats from the cupola in his charge, he now ran from six to ten heats without re-lining. In the discussion that followed, general approval of Mr. Molander's system was expressed, although the opinion was also advanced that equally satisfactory results could be obtained by omitting the air-channel and depending entirely on the passages between the bricks in the melting-zone to provide the desired circulation of air. Several members of the Club stated that they would give Mr. Molander's system a thorough trial, as they believed it was an improvement over present practice.

Generated on 2024-09-30 01:47 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Industrial Unrest

Mr. Gompers says, Yes! The American Federation of Labor says the same. In fact, this is the cornerstone of trade unionism. Gompers says labor has a right to strike so long as employers have a right to act so that labor can get its demands in no other way.

Under the Circumstances has Labor a Right to Strike?

So much hectic denunciation has been hurled at this revolutionary labor movement that it behooves employers to make some effort to understand it. The close of every great war throughout history is a time for epidemics. The quarantine of censorship as at present applied by the belligerent nations has proved to be futile. The munitions of the Bolshevik propagandist are ideas. Ideas cannot be stopped with bullets or censors. We must produce better ideas. The Soviet form of government through which the Bolsheviki hope to achieve the workingman's Utopia is the natural reaction against the autocracy of the old regime. The attendant terrorism and violence are inevitable with all revolutions. Life is cheap these days and they have learned the science of modern war from nations that did not initiate their entrance into the great war with revolution. In avoiding this calamity we must keep in mind that Bolshevism is an economic and not a political revolution. These people are not so much concerned with kings and presidents as they are with the land and the industries of Russia. Wise statesmanship must be immediately applied. The Government building-program is a move in the right direction.

The Peril of Bolshevism Throughout the World.

No provision has been made for the replacement into employment of the 2,000,000 or more soldiers about to be demobilized. 'Buffer employment' in public work as proposed by the Federal authorities has not been materialized. Democratic suspicion of State enterprise still obtains. Except for the temporary power delegated to the Federal authorities for actual war measures, our archaic political machinery is not amenable or adaptable to the administering of such a huge program as the large extension of public work requires. The drive recently attempted by the Massachusetts State and city officials to 'get the boys jobs' may give the politicians some personal advertising, but the only weapon they have to use on employers is moral suasion. Now that the War is over, small employers in a highly competitive market will not be susceptible to this appeal. The larger employers had already agreed to take back their men as soon as they were mustered out of service. Industries engaged in the manufacturing of luxuries and stable pre-war essentials are rapidly getting back to normal conditions, and taking on additional help as fast as orders warrant them doing so. These few industries, however, cannot possibly absorb the thousands of men being released from the army every week. The impatience and dissatisfaction of the home-coming men will be no easy problem to meet. Unemployed discharged men are holding public indignation meetings in New York and Boston, demanding reinstatement in the old positions or work in wages and dignity befitting returning heroes.

Unemployment Increasing in the United States.

Serious strikes have occurred in London, Belfast, Ireland, Paris, Rome, and Buenos Aires as a working-class protest against their respective governments. Great Britain is faced with a strike problem of ominous proportions. The Yorkshire miners numbering 150,000 threaten a strike over the meal interval. The Clyde shipworkers threaten a strike on the demand for a 44-hour week. All the dockyard and munition workers of Belfast, Ireland, struck to express their sympathy with the recently elected Sinn Fein government. The Italian workers struck as a protest against President Wilson's conferring with the Vatican and refusing to address an assembly of their workers. The strikes in the South American republics are distinctly revolutionary. Two thousand were killed and injured in the streets of Buenos Aires. To attribute these strikes to Russian agitators and German propagandists does not solve the problem. The spirit of internationalism among the workers is contagious. Concessions must come from both factions now involved in this world struggle.

International Strikes Complicate the Problem.

Announcement

The Foundrymen's Club is to resume the publication of a monthly bulletin, somewhat in the same form as the original 'Chippings'. It is the aim of the Club to interest the molders and foremen in better methods and to promote good fellowship among the members by an interchange of ideas and the discussion of foundry topics at the monthly meeting. It is vital to the success of the club to have a means of reaching all the workmen in the foundries in order that they may be informed regarding the work of the Club and become interested in its activities. For this purpose the bulletin will be published for free distribution. It will contain short snappy paragraphs of local interest and other items for the attention of club members. The Foundry Department in 'Metal Trades' will be continued as usual with possibly the elimination of the articles of a more personal and local flavor.

Generated on 2024-09-30 01:46 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Notable Recent Technical Articles in Abstract

Heat Treatment of Automobile Springs. By M. E. Hendrickson. 'The American Drop Forger', October.

Either high-carbon steel or some special alloy steel is used for automobile springs. The preferred method for forming is to bend the springs in a machine, the dies of which are then plunged in the quenching medium, which is usually oil. Heating for the forming is usually done in a single-chamber forge furnace. High-grade springs are usually re-heated and hardened as a separate process after forming. The preferred method is in a lead or a chemical bath. Springs should have the highest possible elastic limit, consistent with toughness, and maximum resistance to fatigue. Transverse tests are preferred to tension tests for determining the elastic limit. The Brinell hardness test is also important.

Aluminum and Copper Alloys. By Charles Vickers. 'Machinery', November.

The addition of iron to aluminum and copper alloys improves them but arsenic and antimony are detrimental. The method of casting, cooling, and annealing has a marked effect on the tensile strength and other physical properties of aluminum bronze. Iron counteracts the brittleness produced by a large proportion of aluminum. Adding 1% of manganese strengthens the alloy and favors homogeneity. A good alloy for drawn tubing and similar uses is composed of 70% copper, 3% of a 30% manganese-copper alloy, 12% iron in the form of tin-plate clippings, and 15% aluminum. Alloys of copper and aluminum are improved by double melting.

The Eastman Kodak Company's Training Shop. 'Machinery', November.

This shop is equipped to train about eight pupils at a time, boys about 18 years old being preferred. The training period varies from four to eight weeks according to the individual. The boys are paid wages while learning. Instruction is given in running engine-lathes, turret-lathes, milling machines, drill-presses, and grinding machines. The shop is self-supporting, the value of work turned out being sufficient to cover the expenses. In addition to this shop, the company maintains an apprenticeship course of 12 to 18 months in its regular automatic screw-machine department, and a tool-room course of four years.

Use of Vanadium in Steel-Making. By G. L. Norris. 'Machinery', November.

Contrary to general belief, the principal use of vanadium in steel-making is not as a scavenger to remove oxygen and nitrogen. There are cheaper metals available for scavenging. The real advantage comes from its direct effect in improving the strength, hardness, and toughness of the steel itself. As much as 3.5% vanadium is sometimes used in tool-steel and 1.5% to 2.5% is common. The improvement in quality of high-speed steel varies almost directly with the proportion of vanadium.

Influence of Hot Deformation on Steel. By Georges Charpy. 'The Blast Furnace and Steel Plant', November.

Describes a series of experiments in rolling and working steel ingots. The ingots were of the same cross-section at the start, but the reduction of cross-section varied considerably. Test-bars were taken from the finished pieces. The results indicated that while the changes in structure and strength were governed by a complex law involving the initial state of the ingot and all the subsequent deformations, common belief has attached too great importance to reduction in area by hot-working. In fact for pieces working under transverse stresses, such as cannon, drawing down lengthwise has an injurious effect.

Tests on Simplified Ship Forms. By H. C. Sadler and T. Yamamoto. 'The Marine Review', December 1918.

The tests described were upon the comparative resistance of small models with the ordinary ship-curve lines and others with straighter lines. The conclusion reached was that vessels of the straight-frame type can be designed that will have about the same resistance as the ship-shape form.

The Reclamation of Hacksaws and Metal-Cutting Band-Saws. 'Machinery', January 1919.

Machines have been developed for re-sharpening old hacksaw blades so that they are even better than new. This is explained by the fact that the new blade has a thin decarburized layer of metal near the point of the tooth that is not as hard as the rest of the blade. Re-sharpening removes this layer. Blades should be re-sharpened often, as soon as they show the first indication of dullness. If the set becomes lost, the temper of the saw should be drawn, after which the saw may be re-set, re-hardened, and re-sharpened.

Properties of Liberty Fuel and Results of Economy Tests. 'Power', January 7, 1919.

This is the gasoline substitute recently developed by investigators for the U. S. Army. Kerosene is treated with a chemical and the oxygen content is increased, so that when the fuel is vaporized and admitted to the engine-cylinder, some of the oxygen needed for combustion is present. The specific gravity is variable, ranging from 35° to 72° Baumé. Comparative tests show higher thermal efficiency and greater mean effective pressure than for gasoline. Thus far the fuel has not been produced on a commercial scale.

Electric Welding on the Rock Island Lines. By E. Wanamaker. 'The Boiler Maker', November 1918.

This railroad has been using electric-arc welding for six years. Most of the welding outfits used are portable, and weigh, with the truck, about 1700 lb. Variable-voltage equipment is used. The total cost of installation was about $40,000, and the direct saving is about $136,000 per year besides an additional saving estimated at $64,000 per year caused by the fact that rolling-stock can be kept in operation more days in the year.

A Brass Foundry With Automatic Ventilation. By Charles Vickers. 'The Foundry', December 1918.

Describes the new foundry-building of the Bunting Brass & Bronze Co., of Toledo. Ventilation is provided partly by a large tunnel with branches that runs the entire length of the building, and partly by glass and steel sash that cover the entire sides of the building. Gratings admit air from the tunnel into the building. The roof is saw-tooth, and the air coming through the gratings and from the sides of the building forces the hot gases upward, where they escape through the openings in the roof. Although the building, which is 117 by 173 ft., contains 28 coke-fired furnaces, there is no trouble from fumes and the foundry is comfortable even on the hottest days.

The Conservation of Heat Losses From Pipes and Boilers. By Glen D. Bagley. 'Power', December 24, 1918.

Gives the results of a series of experiments upon magnesia covering under different conditions. The saving resulting

Generated on 2024-09-30 01:50 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

from the use of covering increases rapidly with the temperature difference between the steam and the outside air, but even for low steam-temperatures is considerable. In general, a reasonably thick covering on a steam pipe will pay for itself in a few months. Old covering that is in good condition, is, if anything, a poorer conductor of heat and therefore more efficient than new covering. On the other hand, covering that has been soaked with oil conducts heat rapidly and such covering should be replaced. Tables are given showing the most economical thickneess of covering for varying sizes of pipe and varying temperature differences.

Effect of Impurities in Acetylene on Quality and Cost of Welds. By Charles Bingham. 'Machinery', December 1918.

The principal impurities are sulphur, phosphorus, silicon, lime, hydrogen, and nitrogen and their compounds, and water vapor. The first two, together with lime, affect the quality of the weld. Experimental data are lacking to show that silicon has any bad effect. The remaining impurities lower the temperature of the flame and therefore increase the cost of the work. For the best results, the generator should produce acetylene at as low a temperature as possible. The gas should pass through an efficient water-scrubber and a chemical purifier, and then be dried, preferably by passing it through a vessel containing live carbide.

Different Furnace Types for Electric Melting of Brass. 'Brass World', December 1918.

There are four principal types of electric furnace used for melting copper alloys. The vertical-ring induction furnace is of high efficiency but is not sufficiently flexible for general foundry use. The indirect-resistance, indirect-radiation furnace is less efficient, but is more flexible, and is therefore better suited to general foundry use. The indirect-arc furnace is more efficient than the indirect-resistance furnace and is more flexible than the induction furnace. In its ordinary form it is not suitable for alloys containing any large proportion of zinc. A modified type, however, has recently been developed, where the furnace is rocked mechanically as soon as the charge is melted. This type gives good results with alloys high in zinc. The direct-arc furnace is used to a limited extent for alloys containing no zinc. The advantages of the electric furnace that have offset the high cost of power, particularly during the War, are as follows: saving in metal; improved quality; exact temperature-control, reducing the number of defective castings; increased production; elimination of crucible cost; large operating units; and better working conditions, increasing the efficiency of the workmen.

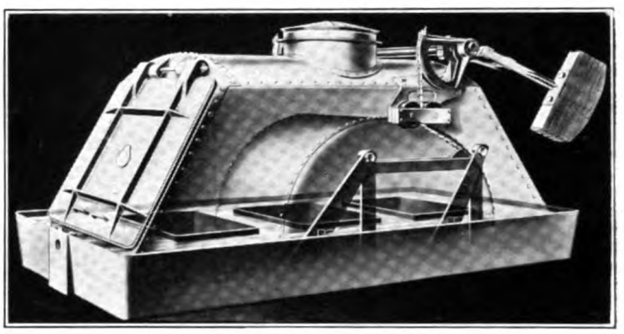
Weights and Measures of Latin America. By Frederick A. Halsey. 'Journal of the American Society of Mechanical Engineers', November 1918.

The principal purpose of this article is to combat the theory that the metric system should be adopted in the United States in order to help our trade with Latin America. Questionnaires addressed to representative citizens and foreigners in the various Latin American countries indicate that while the metric system has been officially adopted in all the Latin American countries, and is nominally compulsory in many of them, the old Spanish units are in general use in most activities, and where any change has been made, it is more likely to be to the English than the metric system. American manufacturers trading with Latin America, and who furnish their machinery and other goods in both English and metric sizes, report that by far the largest demand is for the English sizes. The compulsory adoption of the metric system in Latin America appears to have been almost a complete failure.

INDUSTRIAL EQUIPMENT

A NEW GAS REVERSING-VALVE

In the operation of any gas-fired furnace it is desirable that the valve controlling the direction of the flow of gas shall operate rapidly and easily. These factors have been kept in mind in designing this new gas reversing-valve, which has just been placed on the market by the Wellman-Seaver-Morgan Co. of Cleveland, Ohio. That the conditions have been ideally met is evidenced by the fact that a 36-in. hand-operated valve can be reversed in from 3 to 7½ seconds, with a pressure of not over 25 lb. This is accomplished by a perfectly balanced hood and counter-weights. An equally important feature is that, in this new design, the operating mechanism is outside of the casing where it is easily accessible and always cool. This new valve is similar in principle to the well-known Forter valve and is interchangeable as to ports and clearances.



NEW GAS REVERSING-VALVE.

The general design and construction of the W-S-M valve are clearly shown in the phantom view. It consists of an outer casing, a base with three ports, a hood to connect two ports, and the operating mechanism. The centre port is connected with the chimney. Waste gas from the furnace flows from whichever outside port the hood is covering to the chimney port. This leaves a clear passage for the fuel gas or the air entering the casing through the mushroom-valve at the top to pass through the third port to the furnace regenerator. Reversal of the flow of gas or air is accomplished by moving the hood to a position over the centre port and the one previously uncovered. The base of the valve is a cast-iron rectangular pan with three walled circular openings or ports. The hood that covers the centre and one end port is semi-elliptic in form, made of steel plates with angles at the bottom to support a fire-brick lining.

The base-pan holds a quantity of water so that when the hood is over the ports a water-seal is formed to prevent the escape of gas. The base-pan has a tapped hole at each end for a water-pipe. There is a perforated strainer at the intake-end, and a dam-plate at the other end, to hold the water at such a level as to allow the hood to extend 3 in. into the water forming the seal.

The outer casing is made of steel plate and lined with fire-brick. It has cast-iron door-frames and door at each end through which the hood may be removed or inserted. Each door has a small peek-hole with a swinging cover which enables inspection at any time. On the top of the casing is a cast-iron neck which connects either with the fuel-gas flue or the air intake, depending upon the purpose for which the valve is used. The hood is moved by a series of levers and coupling-shafts, which extend through the water under the casing and into sockets on the hood. The shafts move on chilled-iron bearings. The operating mechanism is actuated by a hand lever.

Generated on 2024-09-30 01:46 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

With all hand-operated valves, a special stand is furnished, as well as six sheaves with hangers, clamps, and wire rope. At each side of the valve is a counter-weight attached to an arm and sector over which passes a chain connecting with the supports of the hood. The form of this sector is such that the counter-weights balance the weight of the hood at any position. The W-S-M valve has the following distinct advantages, the combination of which will be found in no other valve used for reversing the gases of melting or heating-furnaces.

The semi-elliptical form of the hood allows free flow of the gas, as there are no abrupt turns or constricted areas in the passage formed by the ports and hood. This feature is important in obtaining maximum efficiency from the stack draft. All leakage or waste of gas is prevented by the water-seal. Such a seal does away with all packing, tightening, and adjusting, the only attention required being the flow of a small quantity of water into the bed-plate to replace the amount evaporated. Due to its compactness, this valve requires comparatively little floor-space, and adapts itself to various arrangements of flues from the regenerator to the stack. The weight of the hood is counter-balanced by the weights of the lever-arm in such a way that the hood is in balance at any position, so to move the hood it is only necessary to exert enough force to overcome friction. This is an important feature in hand-operated valves.

The materials used for each part of the valve are selected to give long life. The hood and casing are lined with fire-brick, and all working joints are protected from the hot gas. Bearings and wearing parts are designed with a high factor of safety. There are chilled bearings in the bed-plate for the rocker-arms and hardened links and pins on the hood supporting arms. Construction of the valve is such that all parts may be easily inspected and removed. The doors at each end of the outer casing are large enough to allow the hood to be removed. The reversing mechanism does not require the removal of bolts or nuts in placing or removing. The levers, links, and pins of the operating mechanism are on the outside, thus permitting oiling and adjustment, and ensuring long life and easy operation.

IMPROVED SHOP TELEPHONES

The entrance of the Klaxon Company, makers of 'Klaxon' auto-horns, into the field of inter-communication equipment is of special interest to boiler and machine-shop owners, since it will afford an improvement over the ordinary shop telephone for many purposes.

The Stentor Electric Mfg. Co., makers of 'Stentor' loud-speaking telephones, has recently been taken over by the Klaxon Company which will manufacture and distribute the Stentor products in connection with the Klaxon industrial signals through its industrial division with offices in New York. During the War, all of the inter-communication apparatus manufactured by this company was required by the United States government, and announcement of the change was withheld until individual concerns could be supplied. To meet the requirements of our Navy for inter-communication equipment that withstands all weather conditions and can be heard in noisy places, this company developed a transmitter and a receiver that can be heard even under gunfire.

The inter-communication apparatus for shops is fitted with these improved transmitters and receivers. The instruments are enclosed in sturdy, practically unbreakable, weather-proof housings. These need not be opened, as the Klaxon-Stentor loud-speaking telephone transmits messages in so loud and clear a tone that they can be heard at a distance from the instrument itself without the use of ear receivers.

The Klaxon Company was a pioneer in sound reproducing engineering. Klaxon industrial signals are in wide use not only for fire-alarms but also for replacing electric gongs, which must operate under extremely noisy conditions. The Klaxon signal gives a peculiarly raucous far-reaching sound

LOUD-SPEAKING TELEPHONE IN CASE

which is readly heard above all the noice of hammers or other machinery.

While the tones of Klaxon-Stentor loud-speaking telephones are in no sense similar to the saw-tooth sounds of Klaxon horns, still their carrying power is developed along the same lines and is equally effective for their purpose.

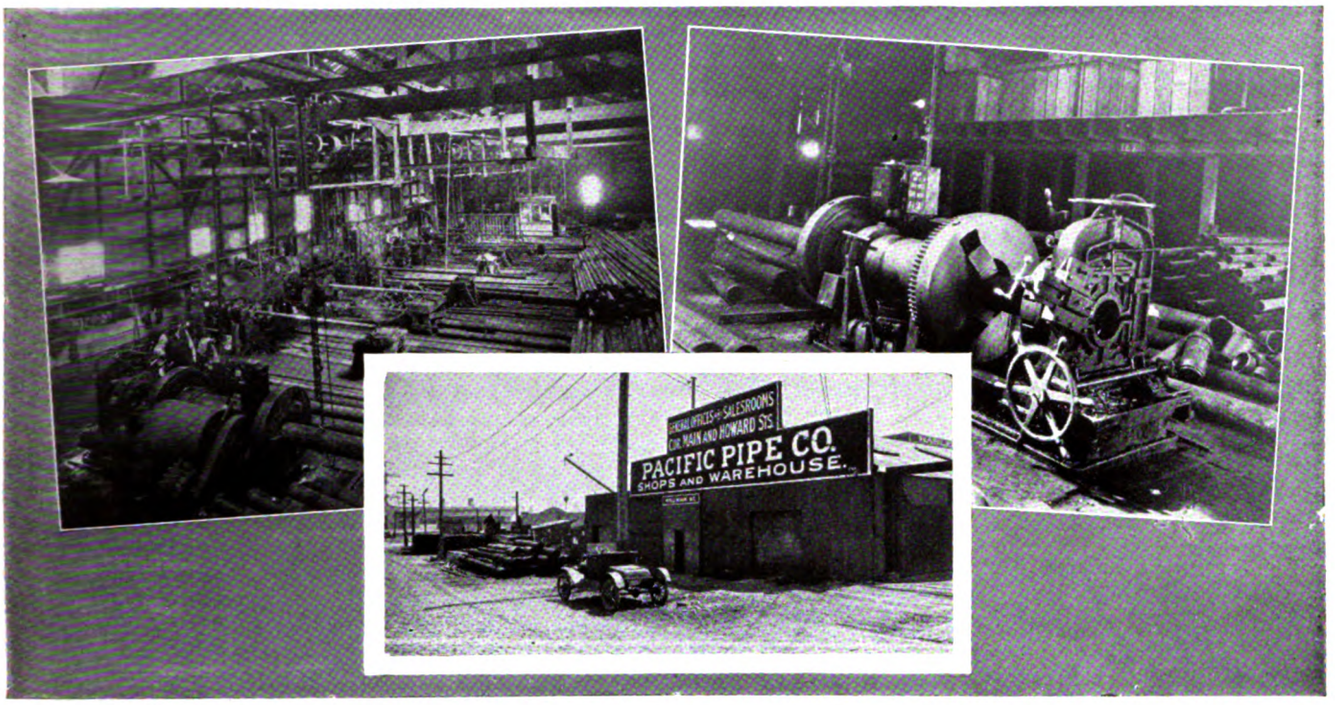
TELEPHONE CASE CLOSED

The Klaxon Company has aggressively entered the inter-communication equipment field, extending its laboratory facilities for experimental research work and engaging several engineers of wide experience in this field to that end. It has employed one of the foremost authorities on telephony and sound reproduction in the United States, and the inventor of the Stentor loud-speaking telephones will devote all his time to development work on inter-communication apparatus. This should be useful in machine-shops.

RE-MANUFACTURING USED PIPE

In the iron and steel industries there is still a shortage of raw material and a necessity for salvaging every available pound of scrap-iron or steel. Not only does this apply to the iron and steel foundries but to the concerns compelled to use iron or steel pipe in construction work. It has been found that used pipe may be re-manufactured and brought to a point where it may fulfil the requirements of engineering specifications. The Pacific Pipe Co., shortly after the San Francisco disaster, conceived the idea that old pipe could be salvaged and re-constructed to a point where it would serve in place of new material. They commenced operations at the corner of Main and Howard streets,

Generated on 2024-09-30 01:48 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN



where they installed considerable machinery. These machines consisted of devices for re-threading, steam-testing, cutting and welding, re-dipping, and straightening.

The company had entered into a business of which there was no other of its kind in the western part of this country. The sale of their product increased so rapidly that it became necessary to acquire in addition to the Howard street plant, the major portion of a block of land at the corner of Main and Bryant streets. Here they erected a building comprising about 10,000 sq. ft. of ground area and installed the best machinery possible to obtain, including the largest pipe-threading machine west of the Mississippi river.

In re-manufacturing its pipe the Pacific Pipe Co. tests every foot to 120 lb. steam pressure, and every weakness is welded or remedied, as the case may require. The bends and crooks are straightened and all defects obliterated.

The market for the product of this company extends over the entire Pacific Coast as far east as Utah, and in the last two years a large trade with the countries westward across the Pacific has developed. Their customers are among the large light and power companies, irrigation enterprises, water companies, oil and mining companies, and all who have used pipe in large quantities. The Winter Garden Skating Pavilion, which gained prominence throughout the West while it was in operation in San Francisco, was equipped with a refrigerator-system comprising over ten miles of 2-in. pipe, so laid that there was not a threaded joint in its entire length, and this equipment was furnished by the Pacific Pipe Co. D. L. Breslauer, the sales manager of this industry, claims that the advantage of used pipe over new pipe is that the former may be had at a greatly reduced price, and that orders may be filled to cover all requirements of new pipe.

The Heine Safety Boiler Co., of St. Louis, has issued a new edition of 'Boiler Logic', containing 86 pages of illustrated matter regarding boilers in general and the Heine boiler in particular. The pamphlet is divided into six parts, the sub-titles being: Some Fundamental Considerations of Boiler Design; Practical Baffling of Water-Tube Boilers; Heine Boilers for Different Fuels, Firing, and Services; Overloads; The Boiler as a Pressure Vessel; Details of Construction of Heine Boilers.

Book Reviews

American Highway Engineers' Handbook. Arthur H. Blanchard, editor-in-chief. Pp. 1579, ill., index. John Wiley & Sons, Inc., New York. For sale by 'Mining and Scientific Press', San Francisco. Price, $5.

This is by far the most complete handbook that has been published on this relatively new subject. The treatment is in fact so complete that it might almost be used as a textbook. The book is divided into 29 sections, each written by a specialist on the particular subjects treated. At the end of each section is a bibliography. The first section is devoted to definitions, most of them based on accepted standards, and constituting a complete dictionary of highway engineering. The second section treats briefly mathematics, mechanics, and the structural materials used in highway work. The third section, on engineering geology, covers rocks, soils, physical geology, the use of maps, and quarrying. Preliminary plans and surveys are considered in the next four sections, the special titles being preliminary investigations, surveys and office practice, planning of roads and road systems, and planning of streets and street systems. The section of surveys contains a number of tables, including some curve-tables arranged particularly for use in highway work. The next section deals with grading, drainage, and foundations. The various types of roads and road surfaces are then discussed in detail, earth and sand-clay roads, gravel roads, broken-stone roads, bituminous materials, dust prevention, bituminous surfaces, bituminous-macadam pavements, bituminous-concrete pavements, sheet-asphalt and rock-asphalt pavements, wood-block pavements, stone-block pavements, brick pavements, and cement-concrete pavements, each being given a section. The remaining sections are devoted to various miscellaneous subjects, including street cleaning, collection and disposal of waste, and snow removal; car-tracks and pipe systems; comparison of types of roads and pavements; sidewalks, curbs, gutters, and highway signs; highway bridges, culverts, retaining-walls, foundations, and guard-rails; preservation of materials used in highway structures; financing of highway improvements; and organization and administration of high-

Generated on 2024-09-30 01:52 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

way departments. In their zeal to make the book comprehensive, the authors and the editor have occasionally erred on the side of being prolix, and there is also considerable repetition, most of it unavoidable if the general plan of the book were to be followed. Nevertheless, the book will be of great value to highway engineers and others engaged in street and road construction.

Public Utility Rate Fixing. By C. E. Grunsky. Pp. 164, ill., index. The Technical Publishing Co., San Francisco. For sale by 'Mining and Scientific Press', San Francisco. Price, $2.50.

Questions of rate-fixing and valuation are engaging and will continue to engage the attention of many engineers. Since the question is partly an engineering and partly a legal one, there is less agreement among the authorities than if it were entirely a matter of engineering. The author of the present volume has already contributed to the literature on the subject in 'Valuation Depreciation and the Rate Base', and in a paper on appraisals presented before the American Society of Civil Engineers in 1912. In the latter paper he was among the first to controvert the hitherto accepted theory that accrued depreciation should be considered in fixing rates, even though the property of the utility be maintained to give 100% service. Also in this and other writings he advocates, in the fixing of rates, the determination of a 'natural rate-base' as distinguished from fair value. The first chapter is devoted to a general discussion of rate-fixing. The second considers special factors to be considered in determining rates, such as obsolescence, losses from fortuitous events, hazard, reward for management, unearned increment, volume of business, and going value. The point that will be found of the greatest interest by most readers is the contention that the volume of business rather than the amount invested should be the principal factor in determining reasonable profit over and above interest on investment. Valuation of real estate is then considered, and then depreciation and appreciation, the inadequacy of many of the most popular formulas being pointed out. Succeeding chapters discuss the value of a water-right, the rate of return, the rate-schedule, the public utility rate-base, and fair value and the rate-base. Many examples are given from court decisions, particularly the Spring Valley Water Co. case in San Francisco. While some valuation engineers will not agree with many of the conclusions expressed, they will all find the book to be of interest and value.

Modern Shipbuilding Terms. By F. Forrest Pearse. Pp. 143, ill. J. B. Lippincott Co., Philadelphia. For sale by 'Mining and Scientific Press'. Price, $2.

This is one of the best among the books that have been published recently to meet the need for information regarding shipbuilding. The author is an instructor in the training section of the Emergency Fleet Corporation. About 2000 terms are defined in non-technical language. The appendices contain discussion of electric, oxy-acetylene, and oxy-hydrogen welding with illustrations showing the various types of welds, a description of the Isherwood system, and a bibliography. There are about 70 plates illustrating many of the terms defined.

Electric Welding. By Douglas T. Hamilton and Erik Oberg. Pp. 283, ill., index. The Industrial Press, New York. For sale by 'Mining and Scientific Press', San Francisco. Price, $2.50.

Although the first experiments in resistance-welding were made in 1886 by Elihu Thomson, the great development in both types of electric welding is a matter of the past few years, and particularly of the past year because of the tremendous activity in shipbuilding, where electric welding seems likely to supplant riveting to a considerable extent, if not entirely. The present volume is the most complete on the subject that has yet appeared. Two chapters are devoted to butt-welding including a discussion of special machines and processes. Spot-welding is next considered, and it will be a surprise to many people to learn that plates $\frac{7}{8}$ in. thick have been spot-welding. Seam-welding and riveting are compared in the next chapter. Percussion welding and electric soldering are then considered in turn. The last three chapters are devoted to electric-arc welding and cutting, including a comparison with similar work done by the oxy-acetylene torch. The book will be of value to anyone interested in welding, electric or otherwise.

Handbook of Mathematics for Engineers. By Edward V. Huntington and Louis A. Fischer. Pp. 186, ill., index. McGraw-Hill Book Co., Inc., New York. For sale by 'Mining and Scientific Press', San Francisco. Price, $1.50.

This is a re-print of sections 1 and 2 of Marks' 'Mechanical Engineers' Handbook'. The first section contains mathematical tables, such as squares and square roots, cubes and cube roots, areas and volumes, logarithms, radians, trigonometric functions, reciprocals, hyperbolic logarithms and other hyperbolic functions, and interest and annuity tables. It also contains tables of weights and measures, both common and metric, work and energy units, Baume degrees, and miscellaneous conversion tables. While some of the tables are not arranged in the manner most familiar to engineers, a little practice should make anyone accustomed to them. The second is devoted to mathematics, the various divisions being arithmetic, geometry and mensuration, algebra including determinants, trigonometry, analytical geometry, differential and integral calculus, graphical representation of functions, and vector analysis. In the small space that is available, little except rules and formulas can be given, there being little room for explanations. This part of the book is therefore of value mainly as a reference book for the engineer who has forgotten only part of his college mathematics, rather than for the man that has forgotten all, or nearly all of it. The book's principal value lies in the fact that all the material it contains is not available elsewhere in this convenient pocketbook form.

A Handbook on Piping. By Carl L. Svensen. Pp. 359, ill., 8 folding plates, index. D. Van Nostrand Co., New York, 1917. For sale by 'Mining and Scientific Press'. Price, $4.

The only means of conveying air, gas, and fluids is by means of continuous pipe; we may neglect gases under high pressure stored in pipes or cylinders as being of comparatively little importance. Wood pipe, in the shape of bamboo, has been used in the Orient for centuries. Wood pipe, made from logs, has been used for over 200 years. Welded-iron pipe has been in use since early in the nineteenth century. From then onward came cast-iron, earthenware, concrete, brass, copper, lead, steel, wood, and other types of pipe. These all have their particular use, whether it be for steam, gas, oil, or acid. Ordinary iron or steel pipe is very strong, resisting great strains before breaking. Another use for pipe is that of hand-rails and guards for machinery. A great length of threaded pipe can be laid in a short time, jointing being simple. With cast-iron pipe, joints require extra time. Wood pipe, if of the stave type, also requires more care, but has great endurance. Many fittings have been designed for the jointing, expansion, and change of direction in pipe, also many valves. Tools for the cutting, threading, bending, and jointing of pipe are generally simple and few. Steam pipe requires insulating to prevent radia-

Generated on 2024-09-30 01:52 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

tion; and water pipe requires covering deep in the ground to prevent freezing. All of the points enumerated above, and many others, are discussed in this practical treatise. We fail to find mention of pipe for acid, important, yet of little significance when compared with the extensive use of pipe for other purposes. Any engineer having a pipe problem on hand should find help in this useful handbook.

Bookkeeping and Cost Accounting for Factories. By William Kent. Pp. 252, ill., index. John Wiley & Sons, Inc., New York. For sale by 'Mining and Scientific Press', San Francisco. Price, $4.

Many engineers who have used Kent's 'Pocketbook' will be surprised to learn from the preface to the present volume that the late author was a bookkeeper and cost-accountant for several years before he became an engineer, and was therefore unusually well qualified for the task he set himself in this book. The first three elementary principles show that, by the use of the combined journal-ledger, the labor of taking a trial balance may be eliminated. The system of accounts recommended by the Federal Trade Commission is discussed and several improvements are suggested. Factory accounting is then shown to be distinct from commercial bookkeeping. The principle is stated that in the general books of a manufacturing concern the operations of the factory should be treated as if they were those of a separate business, belonging to outside persons. The author shows that the cost department should be divorced from the accounting department. Methods of cost-finding are described and distribution of burden is discussed thoroughly. Depreciation, inventory valuation, appraisals, daily and monthly records, classification, and bookkeeping by machinery are considered in turn. The latter part of the book is devoted to practical cost-accounting in various industries, including foundries, blast-furnaces, machine-shops, hardware factories, textile mills, power-plants, and printing-shops. The book will be of great value both to the engineer and the cost-accountant.

Business Law. A working manual of every-day law. By Thomas Conyngton, assisted by Elizabeth A. Smart. Pp. 535, index. The Ronald Press Co., New York, 1918. For sale by 'Mining and Scientific Press'. Price, $4.

The principal points in this work that should be of value to men in the metal trades are: the fundamentals of law, contracts, sales, fire and life insurance, employer's responsibility, corporations and their directors, taxation, arbitration, and the advisability of litigation. If an engineer considers these points a moment, he will admit that most of his troubles come under these heads. Law in its modern manifestations cannot be studied without some reference to economics and sociology. A few years ago, the latter factor was given little consideration, now it is all-important. This new book is not technical, the law in each case being concisely explained, so readers should be able to derive some advice from the examples given.

Applied Mechanics. By Charles E. Fuller and William A. Johnston. Volume II. Strength of Materials. Pp. 538, ill., index. John Wiley & Sons, Inc., New York. For sale by 'Mining and Scientific Press', San Francisco. Price, $3.75.

This is a textbook prepared by two members of the faculty of the Massachusetts Institute of Technology. It is a good textbook, and it makes no claim to be anything else but a textbook. The mathematical discussion of the various principles involved is complete, and it is illustrated at the end of nearly every chapter by a number of problems. The student may, however, be disappointed to find that few of them are worked out for him, neither are there any 'answers' in the back of the book. The scope of the book may be judged from the chapter headings, which are Physical Properties of Materials, Analysis of Stress and Strain, Uniform Stress and Uniformly Varying Stress, Stresses in Beams, Deflection of Beams, Continuous Beams, Combined Stresses, General Theory of Flexure, Columns, Shafting and Springs, Curved Bars, Arches and Catenaries, Cylinders and Plates, and Reinforced Concrete Beams and Columns.

The Instructor, the Man, and the Job. By Charles R. Allen. Pp. 373, ill. J. B. Lippincott Co., Philadelphia. For sale by 'Mining and Scientific Press', San Francisco. Price, $1.50.

Among the many problems that the U. S. Shipping Board had to face in connection with the shipbuilding program, one of the most serious was the shortage of skilled workers, and the necessity for training men to supply this shortage. The instruction scheme that was adopted was probably the largest ever adopted by an industrial corporation. The author of the present volume was assistant superintendent of training for the Shipping Board, and is now with the Federal Board of Vocational Education. The book is largely based on the training work done in the shipyards, but it is just as applicable to industrial training in any other line. While it is possible that vocational training in the schools will ultimately eliminate the necessity for most training classes maintained by the industries themselves, such training classes will be needed for some time to come in many industries, and where they are needed this book will fill a long-felt want. Some of the subjects discussed are Training in the Plant, Analysis and Classification of Trade Knowledge, Establishing an Effective Industrial Order, 'Putting It Over', Methods of Instruction, Lesson Planning, Instructional Management, Organization for Training in Industry, and Instructor Training Courses. The book is practical, and it will be of value to anyone concerned with industrial, or in fact any other kind of training.

Storing. Its economic aspects and proper methods. By H. B. Twyford. Pp. 200, ill., index. D. Van Nostrand Co., New York, 1918. For sale by 'Mining and Scientific Press'. Price, $3.50.

The author of this book has also written on a kindred subject, namely 'Purchasing'. He is connected with the Otis Elevator Co., so should be fully conversant with storage methods. From a number of manufacturers of storeroom equipment he has obtained data and illustrations on the subject, so that it would seem as if the work before us should be thorough. In the 12 chapters are covered the economic questions connected with storing material, the location and equipment of storeroom, appliances used, manual and clerical work, the storekeeper, receiving, inspecting, and placing material, and deliveries. A few pertinent remarks from the book are suggestive: "Into every form of commercial activity which involves the retention for long or short periods of materials and supplies is penetrating the new importance of storing." "Every business needs a certain amount of raw material or manufactured articles, or supplies. For successful operation there must be sufficiency, and there must not be lack." "Too often the storekeeper is looked upon as a man whose duties are exclusively physical. He is not supposed to have a thinking job. The position of storekeeper needs better recognition; it needs recognition on a somewhat different basis to that which is usually accorded it. Sufficient consideration has not been given to the potentialities of the keeper of the stores. He is in complete control of a very large proportion of the wealth of many concerns." "Buying and storing, although distinct

Generated on 2024-09-30 01:47 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

and separate functions in any business, are closely related in all those cases where the goods do not immediately pass out of the possession of the purchaser." "It is essential that stock in storerooms be properly described and designated." And "Nothing should be permitted to enter the storeroom unaccompanied by some form of advice . . . no material should be allowed to leave the stores without a properly drawn requisition." The many duties of store employees are fully discussed, and the illustrations show how stocks should be arranged, handled, and counted. Many companies will find this book worth-while when on their storekeepers' desks.

Mechanisms and Mechanical Movements. By Franklin D. Jones. Pp. 297, ill., index. The Industrial Press, New York. For sale by 'Mining and Scientific Press', San Francisco. Price, $2.50.

This is an analysis of the various kinds of mechanisms classified according to basic principles, illustrated by examples of machinery in actual operation for many different purposes. The chapter-headings are as follows: Motions and General Methods of Transmission in Machines; Speed-Changing and Controlling Mechanisms; Conversion of Rotary and Rectilinear Motions; Reversing Mechanisms; Quick-Return Motions; Intermittent Movements; Irregular Motions; Differential Motions; Clutches and Tripping Mechanisms; and Automatic Feeding Mechanisms. The book will be of value to designers of machinery.

American Methods in Foreign Trade. A guide to export selling policy. By George C. Vedder. Pp. 204, index. McGraw-Hill Book Co., New York, 1919. For sale by 'Mining and Scientific Press'. Price, $2.

This is one of the latest American publications dealing with foreign business and contains many suggestions of value to exporters, especially to those just beginning to enter foreign markets. The author, with a knowledge gained from practical experience, has briefly set forth what he considers the fundamentals of export policies. While many experienced exporters will not agree with some of his conclusions, all will agree that he has succeeded in placing clearly before the reader many suggestions of real practical value. Much of the information contained in his book can be found elsewhere, but most of it is worthy of reiteration, especially when presented in such an attractive style. The author is firm in his convictions and his style is vigorous and pleasing. He has divided the subject into chapters that are crisp, brief, and to the point. Altogether it is a book that offers many helpful suggestions to the established exporter and is at the same time full of valuable advice to the beginner. H. S.

Conveyance and Distribution of Water for Water Supply. By Edward Wegmann. Pp. 652, ill., index. D. Van Nostrand Co., New York. For sale by 'Mining and Scientific Press', San Francisco. Price, $5.

This book is a worthy companion volume to the author's 'Design and Construction of Dams'. It is divided into three parts. Part I is introductory and discusses water consumption and probable growth of population in American and foreign cities as well as the laws governing the flow of water in pipes and conduits. Part II, on Design and Construction of pipe of the different materials as well as special fittings. The treatment of flexible pipe-joints and submerged pipes is particularly full, and contain considerable material from papers presented before engineering societies that has never before been collected. This division of the book also considers aqueducts, stand-pipes, service reservoirs, tanks, fire-protection, and distribution systems. Part III, on Maintenance and Operation, discusses the cleaning of mains, thawing pipes and services; leakage, electrolysis, and other factors affecting the durability of pipes. This division also deals with water-meters, recording instruments, as well as other methods for the detection of leakage and waste. The appendixes contain standard specifications for pipe, specials, hydrants, and valves, also structural and boiler steel, as well as tables of fire-streams and a discussion of special fire-protection for buildings. The book will be of value to waterworks engineers and superintendents.

Gages, Gaging, and Inspection. By Douglas T. Hamilton. The Industrial Press, New York. For sale by 'Mining and Scientific Press', San Francisco. Price, $2.50.

The development of interchangeable manufacture has emphasized the importance of careful gauging and inspection. The present volume is the first to deal exclusively with this subject. The principles of the limit system are first considered and then the different kinds of measuring machines and reference and working gauges are described. Many different types of gauges are discussed, including plug and ring gauges, profile gauges, indicating gauges, thread gauges, and devices for measuring gears. The book is well illustrated and the language is as non-technical as is possible to make it. The book should be of value to shop foremen, toolmakers, inspectors, and others connected with shops manufacturing on the interchangeable plan.

Shop Management and Systems. By Franklin D. Jones and Edward K. Hammond. Pp. 298, ill., index. The Industrial Press, New York. For sale by 'Mining and Scientific Press', San Francisco. Price, $2.50.

Scientific management has been a subject of many disputes. However, whether we like it or not, it is a fact that the real thing, properly applied, brings results. Wherefore it is well for us to learn how to distinguish the real thing from the many imitations, and also to learn how to apply the real thing properly. For such a task the present volume will be a considerable help. The first chapter deals with industrial organization, with special reference to the distinction between the old-style 'line' plan and the more modern 'staff' plans. Several chapters are then devoted to various systems of accounting, routing, and general recording. The chapter-headings are General Shop Systems; Tool and Supply System for a Large Plant; Ordering, Manufacturing, Distributing, and Accounting for Special Tools; Following Progress of Work; Inspection Systems; Small Tools; Tool-Checking Systems; Delivering and Identifying Tools; and Tool Supply Systems. The next chapter discusses the tool engineering department, and after that, the assembling department and the purchasing department are discussed in turn. Wage systems, from the ordinary day rates to piece-work, bonus, and premium systems are then considered. The last chapter is devoted to systems for what is frequently the most unsystematic place in the whole factory, the drafting-room. Illustrations of the various kinds of systems are drawn from methods actually in use in various manufacturing plants. The book is clearly written and should be of value to everyone concerned with shop management.

Steam Engines. By E. M. Shealy. Pp. 286, ill., index McGraw-Hill Book Co., Inc., New York. For sale by 'Mining and Scientific Press'. Price, $2.50.

The author is associate professor of steam engineering at the University of Wisconsin, and the book is written primarily as a textbook for students, but it will also be of value to the operating engineer who wishes to increase his knowledge of the technical side of the subject. The book is almost

Generated on 2024-09-30 02:02 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

entirely devoted to reciprocating engines, turbines being discussed in the last chapter only, and then very briefly. The first chapter considers elementary principles, also the plain slide-valve engine, and this is followed by a discussion of Corliss engines, locomotive engines, and marine engines. Other chapter-headings are as follows: Parts of the Steam-Engine; Heat, Work, and Pressure; Properties of Steam; Indicators; Horse-power; Action of Steam in the Cylinder; Steam-Engine Testing; The Slide-Vale; The Valve-Diagram; Valve-Setting; Shifting-Eccentric and Meyer Valve; Reversing Mechanisms; Corliss Valve-Gears; Governing; Compound Engines; Condensing Apparatus; Lubrication and Steam-Turbines. The book is well illustrated and is as nearly non-mathematical as is possible, considering the subject.

Handbook of Machine-Shop Electricity. By C. E. Clewell. Pp. 447, ill., index. McGraw-Hill Book Co., New York. For sale by 'Mining and Scientific Press', San Francisco. Price, $3.

The use of electricity in the machine-shop both for lighting and for power has become so general that there is need for a convenient handbook for the use of managers and foremen. This need is met by the present volume. The language is as non-technical as is possible for a book of this character, and, while it could hardly be used as a text-book, the book will be serviceable to men of relative little technical education along these particular lines. The divisions of the book are as follows: Abbreviations, Terminology, and Units; Circuits, which includes wiring for both direct and alternating current; Costs, mainly pre-war, but some of them, unfortunately, are not dated; Communication and Distant Control; Current Supply, Generators, and Transformers; Electro-chemical, Soldering, and Welding; Heating and Magnetic Apparatus; Lamps and Shop-Lighting; Measuring Instruments and Measurements; Motors.

Trade Notes

Monarch Tractor Sales Co. has opened an office and showroom at 120 South Aurora street, Stockton.

A bond issue of $1,500,000 for highway improvement has been voted in Salt Lake county, Utah.

Hutchinson Bros. & Co., Ltd., of Victoria, B. C., are having plans prepared for a $50,000 foundry.

The **State Board of Harbor Commissioners** has decided to wreck the old pier No. 1 and build a new reinforced concrete structure in its place.

The **Parr Terminal Co.** has awarded a contract for the construction of a wharf on the Oakland west waterfront to the **Tibbitts-Pacific Company.**

Contract for construction of nine miles of standard-gauge logging-railroad near Bend, Oregon, has been awarded to **Sims & Carlson,** of Spokane.

O. H. Fischer, president of the **Union Gas Engine Co.,** returned February 12 from a month's business trip to Washington and other Eastern cities.

P. J. Walker & Co. are constructing reinforced concrete additions to the factory of the **Chevrolet Motor Co.** at Oakland. The estimated cost is $200,000.

C. J. Albert, Pacific Coast sales manager for the **Cleveland Pneumatic Tool Co.** has returned from Cleveland where he attended the annual meeting of sales managers.

C. E. Thatcher, of Oakland, and **D. C. Shelter,** of Los Angeles, are planning to construct a reinforced concrete multiple-arch dam 200 ft. high on the Chowchilla river.

The Smelters Steel Co. is preparing to construct four electric furnaces with a total capacity of 30 tons of pig-iron per day near Seattle. British Columbia ore will be used.

The **Central California Tractor & Implement Association** will hold a tractor show at the Mordecai ranch, ten miles north of Fresno, April 24 to 29. **V. H. Wallace,** Fresno, is secretary.

Lange & Bergstrom have been awarded a contract for the construction of nine hollow-tile and concrete buildings at the naval aviation school at North Island, San Diego. The contract price is $431,480.

Western Pipe & Steel Co. has been awarded a contract for furnishing 750,000 lb. of riveted-steel pipe and specials for the penstock at power-house No. 2 of the Los Angeles aqueduct in the San Francisquito canyon.

The Virden Packing Co., of Sacramento, has filed articles of incorporation, with a capitalization of $5,000,000. The company plans to construct stockyards and packing-houses at West Sacramento at an estimated cost of $2,500,000.

C. W. Whitney, formerly in charge of the San Francisco sales office of the Yuba Manufacturing Co. has opened offices in the Insurance Exchange building under the name of the **C. W. Whitney Co.,** specializing in machinery and mechanical equipment.

R. M. O'Neill has been appointed business manager for the tractor demonstration to be held near Sacramento May 5-10 under the auspices of the **California Tractor & Implement Association.** He has opened headquarters at the Hotel Land, Sacramento.

M. A. Odhner has been appointed assistant to the Secretary of the California Metal Trades Association. Mr. Odhner comes to the Association from the army, in which he held a captain's commission. Previous to that he was engaged in secretarial and newspaper work.

At the annual meeting of the **Noble Electric Steel Corporation** the following officers and directors were re-elected for the ensuing year: **H. H. Noble,** president; **W. H. French,** vice-president and general manager; **Ernest E. Mead,** secretary; **C. A. Mann** and **D. H. Newall.**

The San Joaquin Light & Power Co. will construct another large power plant on the San Joaquin river, to be known as San Joaquin Plant No. 6. The total cost including the diversion dam and conduits will be $1,750,000. The plant will have a capacity of 15,000 kilowatts.

The Navy Department will construct a structural shop costing $1,450,000 at Mare Island Navy Yard. Bids are to be opened on March 10. California firms that have applied for plans and specifications are Lange & Bergstrom and the Lindgren Co., both of San Francisco, and Naritzen-Kuns Co., of Los Angeles.

The Great Western Power Co. will construct a power-plant at Caribou on the north fork of the Feather river near Belden. The estimated cost including conduits is $7,000,000. Construction of the company's plant near Oroville will be undertaken later, but not until the demand for additional power justifies it.

H. A. DeFries, chief engineer for **Hamilton & Hansell, Inc.,** with headquarters at their main office in New York, has been visiting the branch office at the Rialto building, San Francisco, of which **J. W. Stjernstedt** is manager, in connection with the Rennerfelt Electric Furnace for which Hamilton & Hansell, Inc., are licensees and manufacturers.

Louis G. Henes has moved his office from the Monadnock building to the Joshua Hendy building, 75 Fremont street, where he has a large show-room for the display of machine tools. His Los Angeles office remains in the Title Insurance building, with Charles Taylor in charge. Mr. Henes specializes in labor-saving machinery and is glad to advise on mat-

Generated on 2024-09-30 01:53 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

ters pertaining to increasing production and lowering costs by the use of modern equipment.

The All-Russian Central Union of Co-operative Societies, representing 30,000 societies containing 20,000,000 members, and which did a gross business of 700,000,000 rubles in 1918, has opened offices at 167 Post street, San Francisco, in charge of **Alexander Zelenko.** Manufacturers and producers in general desiring to engage in exporting to Russia and Siberia are requested to send, in duplicate, catalogues, price-lists, and other information to this office.

During the construction of the steamer 'Diablo' by the **Pacific Coast Shipbuilding Co.,** at Bay Point, no fatalities were recorded and no other accidents more serious than the injury of one workman's eye. A further tribute to the 'safety-first' policy at the yard was paid by **R. S. Bonsib,** district safety engineer for the Emergency Fleet Corporation, who stated that in the application of safety principles, rules, and devices, it was not excelled by any yard in America.

At the annual meeting of the **Holt Manufacturing Co.** the following officers and directors were re-elected: **Benjamin Holt,** president; **Thomas F. Baxter,** general manager; **Pliny E. Holt, Murray M. Baker, R. S. Springer,** and **D. N. Gilmore,** vice-presidents; **C. Parker Holt,** treasurer; **C. A. Bachelder,** general purchasing agent; **O. H. Eccleston,** assistant secretary; **C. L. Neumiller,** general counsel, and **H. T. Preble. Pliny E. Holt,** who has been in Washington on work for the Ordnance Department, has returned to Stockton. **Sutherland G. Taylor, Jr.,** has been appointed export manager.

The Ingersoll-Rand Co. has issued the following bulletins: Form No. 9120, a 4-page catalogue describing the Leyner oil furnace No. 3. Form No. 9010, a 4-page catalogue describing the Sergeant ticket-canceling box. Form No. 9123, a 24-page catalogue describing the use of Imperial tie-tamping outfits on many of the important railroads in the United States. Form No. 9026, a 12-page catalogue describing the Ingersoll-Rand high-speed steam-engine, class FP. Form No. 9028, an 18-page catalogue describing Ingersoll-Rand equipment for sugar factories and refineries. This is printed both in English and in Spanish.

The American Welding Society was formed recently at New York. The constitution provides for five classes of members; active members with full rights of membership, annual dues, $100; associate members with power to vote but not to hold office, annual dues, $25; associate members without vote, annual dues, $5; associations, scientific societies, and Government departments, no annual dues; honorary members, no dues. The co-operation of various organizations, including the national engineering societies and the U. S. Shipping Board, has been invited. **C. A. Adams** of Columbia University has been elected chairman.

The Material-Handling Machinery-Manufacturers' Association was formed recently at the suggestion of the Department of Commerce and the U. S. Shipping Board, and offices have been opened at 35 West 39th street, New York. The work of the Association will be similar to that of most trade organizations, except that more extensive technical committee work will be required than is usually the custom. There is one aspect of the work that is unusual. Other trade organizations will be asked to appoint material-handling committees which will meet with committees appointed by the new association to consider the special handling problems of each particular industry. The officers of the Association are Calvin Tomkins, president; J. A. Shepard, vice-president; Zenas W. Carter, secretary and manager; Lucian C. Brown, treasurer; J. A. Shepard, Lucian C. Brown, R. W. Scott, F. W. Hall, William Clark, J. C. Walter, C. M. Watson, and F. Stadelman.

The Bethlehem Turbine Shop at Alameda

(Continued from page 106)

to assembly work, and also contains the office and tool-room. There are, however, four 6-ft. Bickford drill-presses, three 28-in. Le Blond engine-lathes, and three 36-in. Le Blond engine-lathes on that side. The main feature of the north side lower floor is a battery of 16 boring-mills. These are of either Bullard or Niles make, and range in size from 42 in. to 100 in. In this bay are also four 5 by 18-ft. open-side Cleveland planers and one 5 by 20-ft. Cincinnati planer. There are also three automatic screw-machines. A National Brake & Electric Co. compressor of a capacity of 550 cu. ft. of free air per minute, direct connected to a Westinghouse motor, is placed in this bay. Air is piped through the building as well as both salt and fresh water.

On the north side of the mezzanine floor there is a battery of sixteen lathes, including eight 22-in. Le Blond, two 24-in. Lodge & Shipley, two 24-in. Park & Lacey, and four 26-in. Reed-Prentice. The rest of that side is used as an assembly floor for small stuff. The east end of the mezzanine floor is the receiving and shipping department for small material. On the south side of the mezzanine floor there is a battery of eight 3-A and 4-A Warner & Swazey turret-lathes, and next to them is a battery of milling-machines consisting of six No. 4 Cincinnati, two No. 5 Cincinnati, one Becker, and one automatic Gleason gear-cutter. There are also four 4-ft. Cincinnati Bickford drill-presses on this side.

The tool-room is in the west end of the south gallery. This contains a Brown & Sharpe grinder for grinding tools, two 4-in. Cincinnati millers, seven 16-in. lathes, Reed-Prentice and Le Blond makes, one Gould & Eberhardt shaper, and a Milford high-speed hacksaw.

There are nearly 100 men employed in the tool-room and in repair work. The whole shop has approximately 600 men on the roll.

The writer is indebted to Edward Narr, foreman of the turbine-shop, Frank Neitzel, superintendent of construction, and to R. H. Fenkhausen, electrical engineer, for the information contained in this article.

RECENTLY a bull on a big country estate became so unsafe that it was found necessary to send for a veterinary surgeon and have him dehorned. As the veterinary was leaving, he met an old colored man.

"I sure am glad, doctah," said Rastus, with a look of great relief, "dat yo' hab done gone an' chopped de ho'ns offen dat bull."

"Why do you say that, Rastus?" smiled the veterinary.

"It am jes' dis way, doctah," rejoined the colored man, "I'se too old ter climb trees and I'se too young ter die."

Generated on 2024-09-30 01:46 GMT / https://hdl.handle.net/2027/uiug.30112007837682
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN